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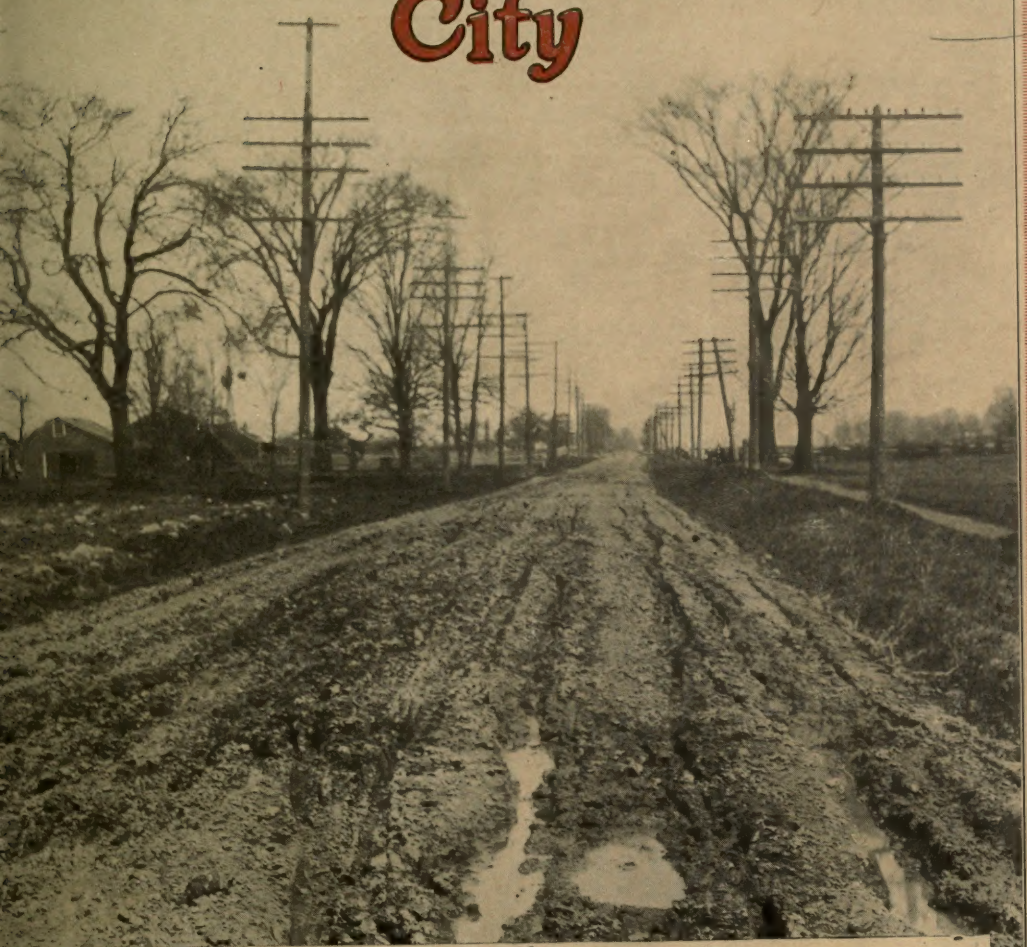
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95

The American City

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As an After-War Policy of Reconstruction

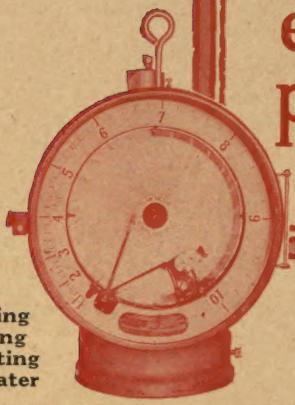
LET US ABOLISH THE MUD TAX

During the period of readjustment now beginning, an intelligent program of road-building can be made a factor of the utmost importance in promoting the public welfare. Such a program will involve the expenditure of some billions of dollars by national, state and local governments in the building and repair of roads, bridges and culverts; it will provide work for many thousands of returning soldiers; it will facilitate the readjustment of industry on a peace-time basis, and it will give the United States a permanent asset of the greatest value in reducing costs of agriculture, manufacture and distribution. Among the many benefits will be the stabilizing of employment, lowering of living costs, and a substantial aid to America in competing for foreign markets by other means than reducing wages or profits.



Recordi
Integra
Feed W
Meter.

How many pounds of water are your boilers evaporating per pound of coal?



Indicating
Recording
Integrating
Feed Water
Meter.

Can Pumping Plants answer with reliable figure

Perhaps the amount of coal burned is known but what about the water it evaporated?

G-E Feed Water Meters

will measure accurately, day in and day out, the water supplied to boilers, information which is of the utmost importance if fuel is to be saved.

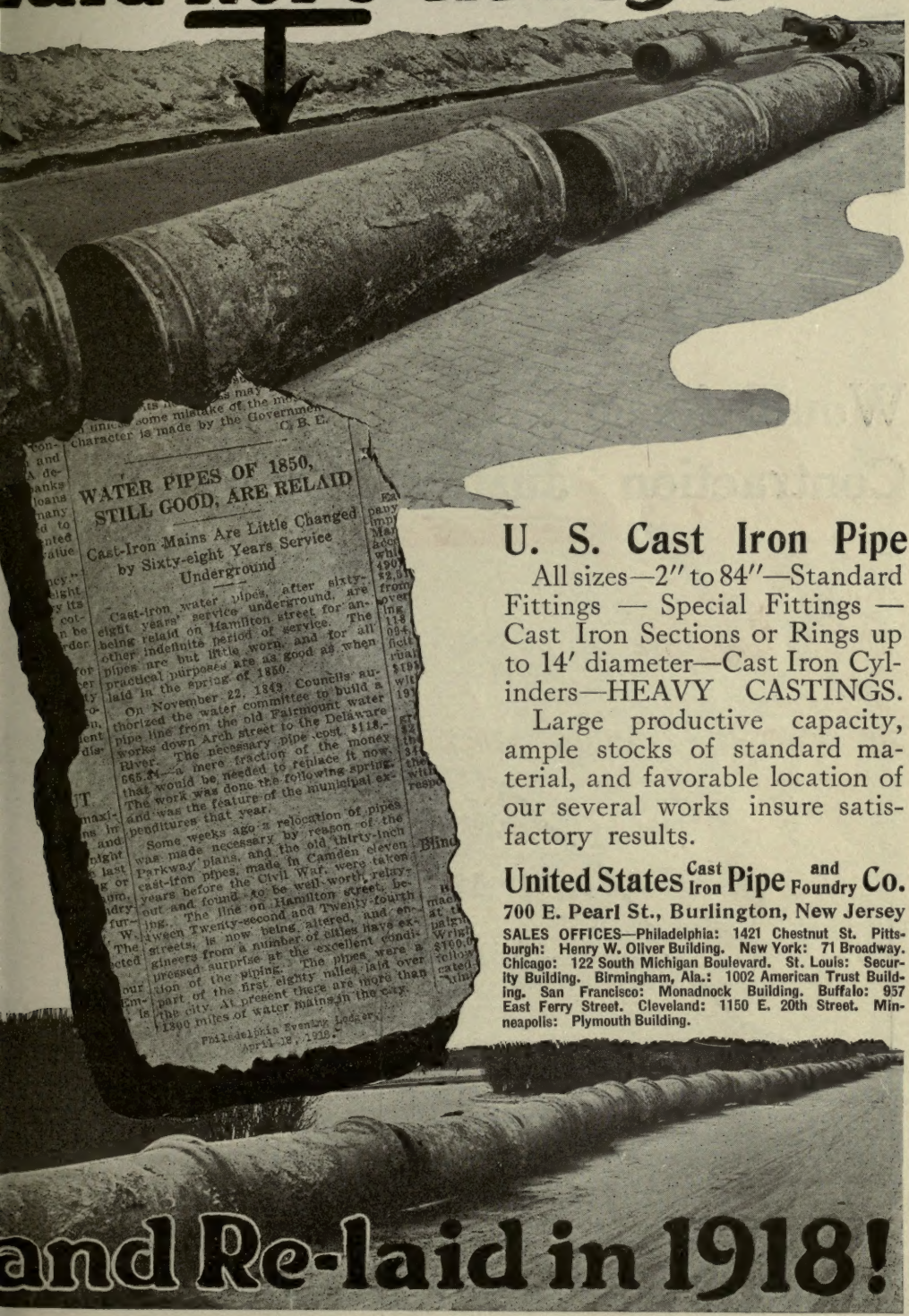
G-E Flow Meter Specialists will gladly assist you in determining the best equipment for your conditions.

Bulletin 46501B describes G-E Feed Water Meters. Send for it now.

GENERAL ELECTRIC COMPAN

GENERAL OFFICE: SCHENECTADY, N.Y.

Laid *here* in 1850



WATER PIPES OF 1850, STILL GOOD, ARE RELAID

Cast-Iron Mains Are Little Changed by Sixty-eight Years Service Underground

Philadelphia Evening Ledger, April 12, 1918.

U. S. Cast Iron Pipe

All sizes—2″ to 84″—Standard Fittings — Special Fittings — Cast Iron Sections or Rings up to 14′ diameter—Cast Iron Cylinders—HEAVY CASTINGS.

Large productive capacity, ample stocks of standard material, and favorable location of our several works insure satisfactory results.

United States Cast Iron Pipe and Foundry Co.

700 E. Pearl St., Burlington, New Jersey

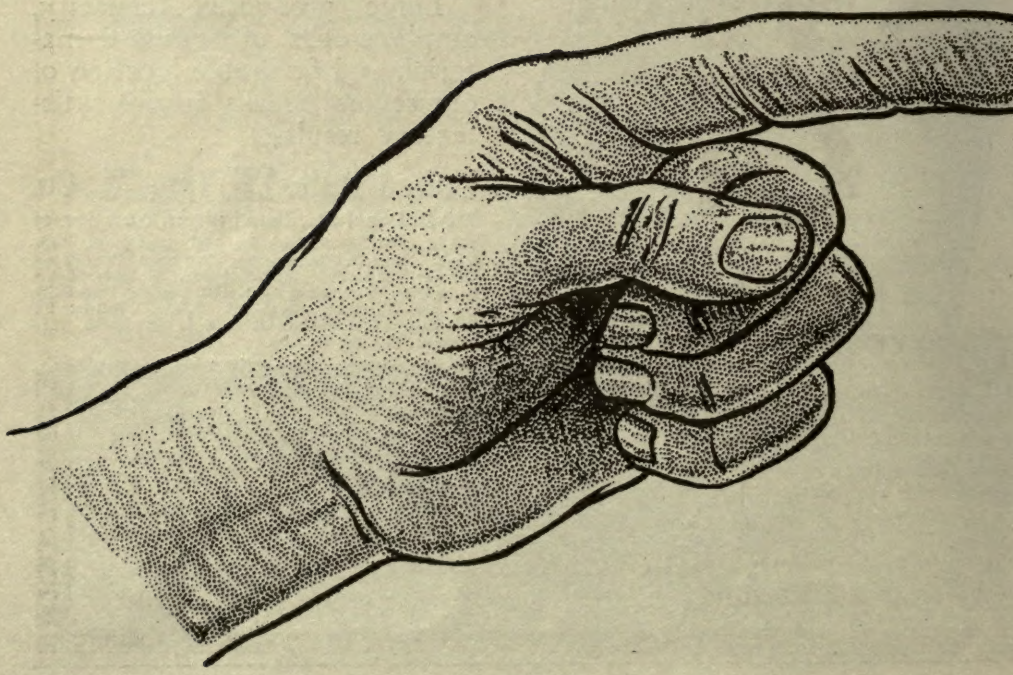
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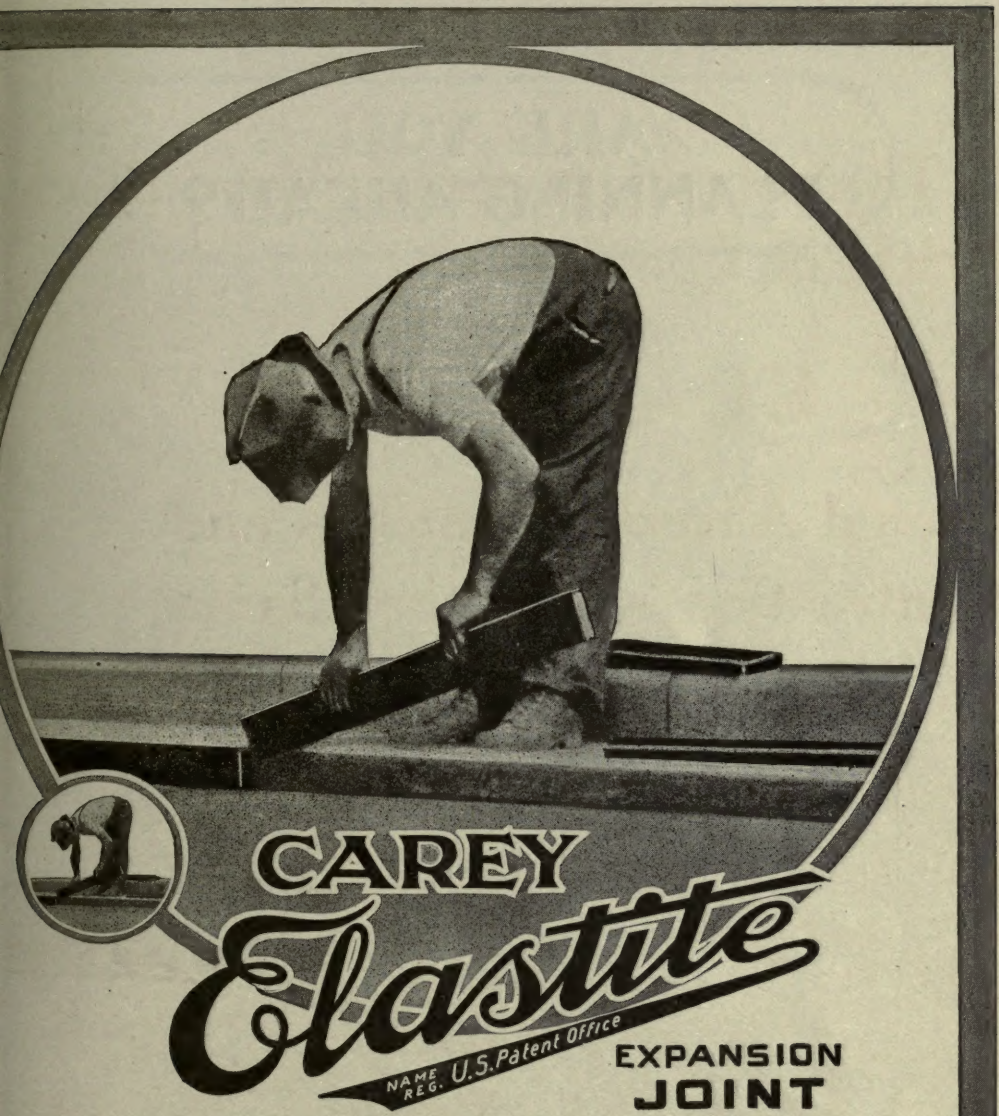
and Re-laid in 1918!

If That Street Were of Wood Block Brick, or Concrete——

ELASTITE

Would Absorb Expansion and Contraction Just the Same





CAREY
Elastite
NAME REG. U.S. Patent Office
EXPANSION
JOINT

Especially Good for Brick Streets

CAREY ELASTITE can be relied on at all times and under all conditions to absorb all expansion and contraction due to changes in temperature.

This is because it is made of tempered asphalt compound which does not melt in summer nor become brittle and crack in winter, and which adheres to the brick forming a water-tight seal as long as the street itself will last.

It is used on brick streets in Philadelphia, Baltimore and most important cities—also on concrete streets and sidewalks, on the Lincoln and Dixie Highways and other good roads.

For descriptive literature and sample write

THE PHILIP CAREY COMPANY

8 Wayne Ave., Lockland **CINCINNATI, OHIO**



When writing to Advertisers please mention THE AMERICAN CITY.

"In planning for after the war reconstruction do not overlook the playgrounds. War is seriously hurting the present generation. We must determinedly look ahead for the rebuilding of the human race. On our children will come the aftermath of war, the long struggle for recuperation which must follow the destruction of life and property on the present scale. And I am not thinking of the financial aftermath only or mainly. There will be great problems to be solved. We must make the coming generation strong and vigorous, able to meet the problems they are to face. Our playgrounds are a necessary link in this work. We must maintain their standard of efficiency."

Now Is the Time To Look Ahead And Do Your Planning

You will frankly admit that your community ought to pay more attention to playgrounds than it does. Why not make a start to-day by sending us your address so we can place your name on our mailing list to receive the illustrated printed matter which we issue from time to time relative to the most up-to-date methods of installing and maintaining public playgrounds?

The Everwear Manufacturing Company
Springfield, Ohio

EVERWEAR
STANDS WEAR AND TEAR



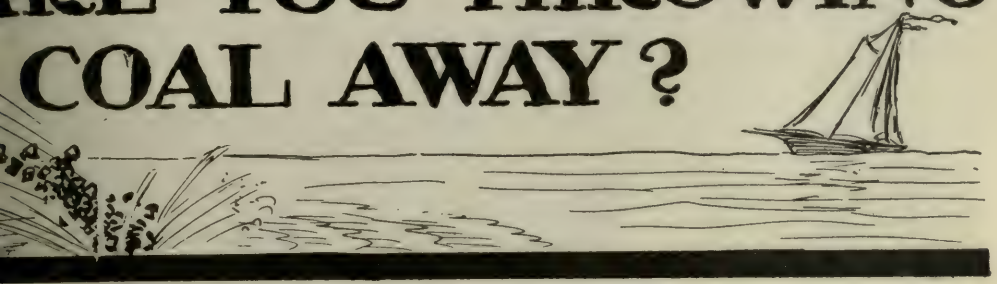
It Has Been Easy to Waste Coal in the P but It Is Now Necessary to Save It.

The water works systems which persist in hanging on to the old flat rate system of charges are throwing coal away just as surely as if they hired men to shovel their coal into the river.

You know this, everyone knows it. Then why do we keep harping on it? Because it takes a long time to teach new tricks to old dogs. Bad habits are not quickly broken, and some municipalities still need to have a lot of sharp pins stuck into their skins to awaken them to their criminal responsibility in having failed to put all water services on a meter basis.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter

ARE YOU THROWING COAL AWAY?

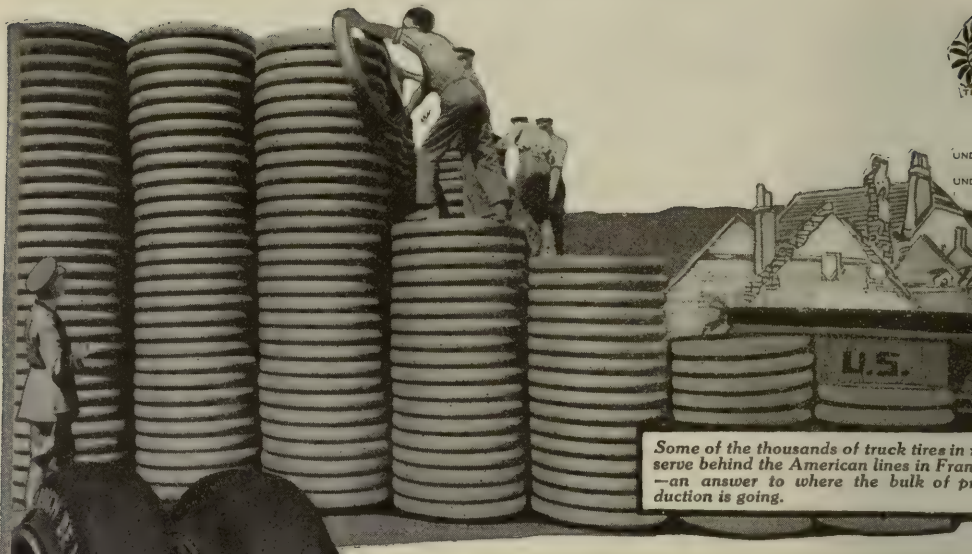


e Waste Resulting from Unmetered Water Services Has Always Been Inexcusable.

And with the present shortage of labor, coal and machinery it becomes worse than inexcusable, it becomes unpatriotic and criminal. If you are willing to help in placing your own city on a real efficiency basis send us your address so that we can send you some printed matter and booklets which may ass'st you towards a solution of the problem in your own town.

And when it comes to selection of meters remember this. The Trident Meter is not cheap, on the contrary it will cost you a little more at the start—but the extra cost will seem very negligible during the years and years of accurate service which the Trident renders.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter



Some of the thousands of truck tires in serve behind the American lines in Fran —an answer to where the bulk of pr duction is going.

When the Army Buys Truck Tires

WHEN an army buys truck tires it gives special attention to the rubber compound As you perhaps know, rubber, like gold o metal or hides, needs chemical assistance t make it practicable. Pure rubber truck tire would be a tragedy. So the manufacturer, i his laboratory, compounds or mixes material to give the rubber a toughness and vitality without sacrifice of elasticity.

And he who compounds most skillfully produces th BEST truck tire, the most lasting!

In this respect, don't you think the fact that Goodrich was the *only* manufacturer to deliver tires direct from stock—when the government asked for truck tires—without changing the compound to meet governmen specifications speaks volumes for Goodrich Truck Tires the product of a half-century of rubber experience?

THE B.F.GOODRICH RUBBER COMPANY
The City of Goodrich—AKRON, OHIO

MORE RUBBER ON THE TREAD

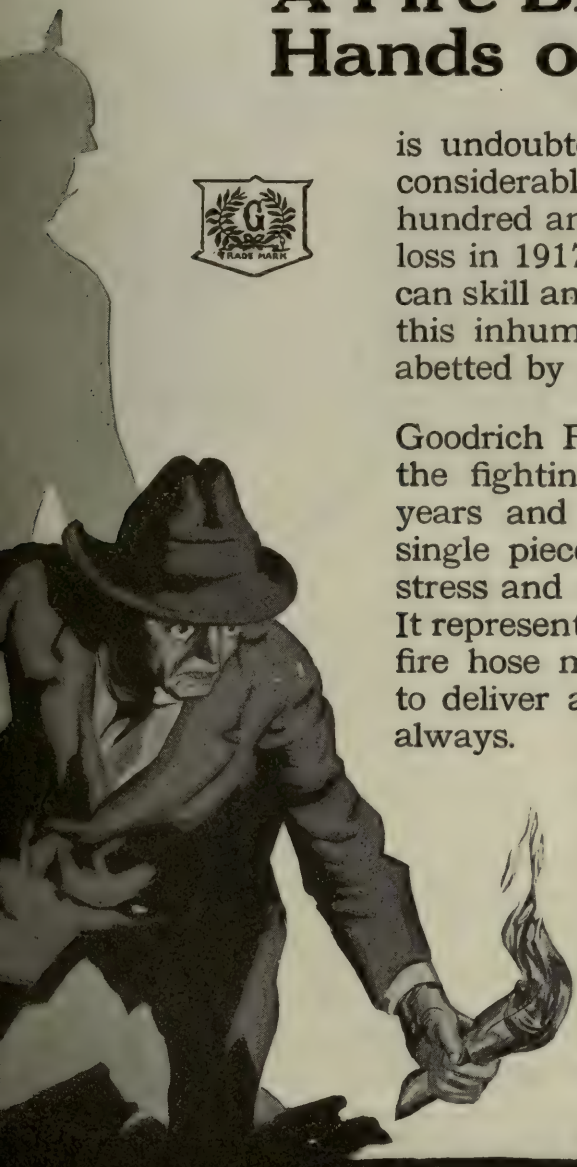
De Luxe Truck Tires

MADE ONLY BY

GOODRICH

GREAT E PROTECTI FOR LOADE TRUCK

A Fire Brand in the Hands of the Devil



is undoubtedly responsible for a considerable proportion of our two hundred and fifty million dollar fire loss in 1917, and only with American skill and alertness can we fight this inhuman evil prompted and abetted by enemy propaganda.

Goodrich Fire Hose has been on the fighting line for nearly fifty years and we never heard of a single piece going bad under the stress and strain of actual service. It represents America's best skill in fire hose making and is prepared to deliver a good account of itself always.

Remember the name—

Goodrich
"White King"
Fire Hose

THE B.F.GOODRICH RUBBER COMPANY

Makers of the Celebrated Goodrich Automobile Tires—*"Best in the Long Run"*

The City of Goodrich—Akron, Ohio

GOODRICH
"WHITE KING" FIRE HOSE

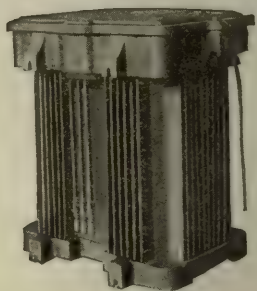
A Transformer For Every Class Of Distribution Service



Type S. Single Phase
2300 Volts



Type SK. Single Phase
13,200 Volts



Type ST. Three Phase
2300 Volts

Regardless of the class of service for which they are designed, Westinghouse Distribution Transformers have demonstrated their rugged and reliable construction.—They are

Convenient to Install.
Uniform in Quality.
Efficient in Service.
Safe in Operation.



Type SM. Manhole,
Single Phase, 2300 Volts



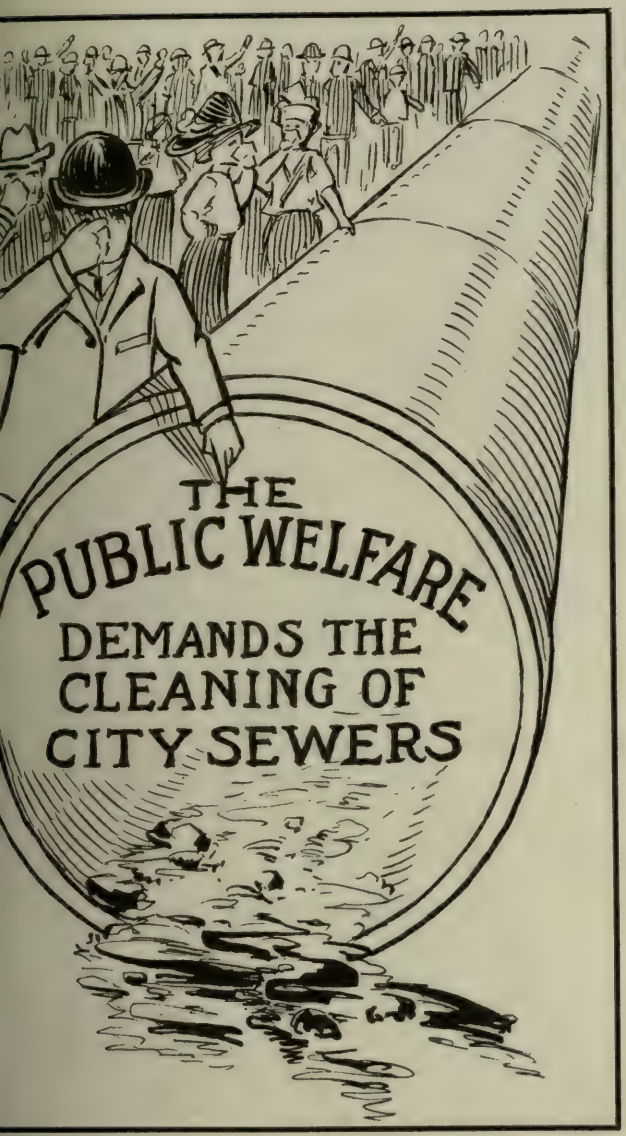
Type STM.
Manhole. Three Phase
2300 Volts

Westinghouse

Westinghouse Electric & Manufacturing Co.

East Pittsburgh, Pa.

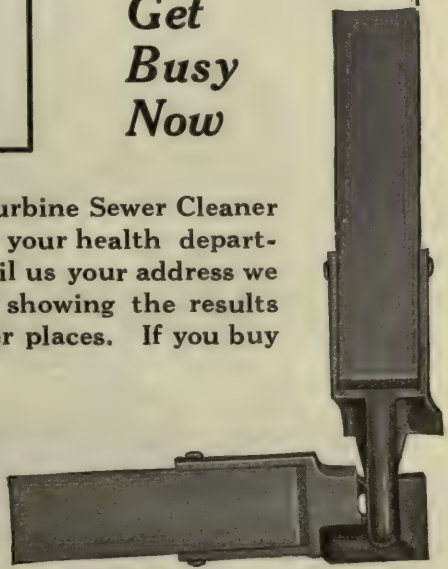
Sales Offices in All Large American Cities



DO YOU SUPPOSE FOR ONE INSTANT THAT YOU CAN ALLOW YOUR SEWERS TO CLOG UP WITH FILTH WITHOUT THE HEALTH OF YOUR CITY BEING AFFECTED?

Get Busy Now

A healthy city is the first essential. The Turbine Sewer Cleaner keeps your sewers from making trouble for your health department. Are you interested? If you will mail us your address we will send you illustrated printed matter showing the results obtained by the Turbine Machine in other places. If you buy sewer rods, we make them also.



The Turbine Sewer-Machine Co.
197 ELEVENTH STREET MILWAUKEE, WIS.

CONTINUOUS PERFORMANCE

A story of long time on the big circu



THIS is no tale of
in the life of pi
short engag
The fact is
—thr
people—250 years in France,
120 y
64 years in Canada, 101 years in New
70 in Boston, 65 in Chicago, such their
record for continuous performance.

THE FIRST CAST IRON PIPE EVER MADE IN
SERVICE
CAST IRON PIPE
MEASURED BY
CAST IRON PIPE
CENTURIES
MORE THAN 250 YEARS OLD
STORY IS STILL IN SERVICE

The Cast Iron Pipe Publicity Bureau
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'From the smallest to the tallest'

CAST IRON SOIL PIPE

WILL OUTLAST THE BUILDING-
—ANY BUILDING

ITS HISTORY IS ITS ADVOCATE



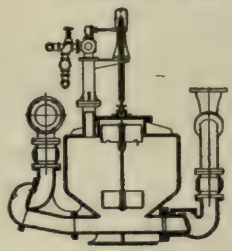
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USE SOIL PIPE WHERE SOIL PIPE SHOULD BE USED

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SHONE SEWAGE EJECTORS
YEOMANS SEWAGE EJECTORS
SEWAGE PUMPING PLANTS



designed and constructed—
Pneumatic or Centrifugal

Send for our bulletins No. P-4000, E-2000, B-3000

YEOMANS BROTHERS CO.
225 Institute Place, Chicago

LYNCHBURG FOUNDRY COMPANY



Bell and Spig
and Flange

GENERAL SALES OFFICE: Peoples Gas Building, CHICAGO, ILL.

AMERICAN CAST IRON PIPE CO



MANUFACTURERS OF



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ALA.

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ATLANTIC PUMPING ENGINES



Always "on the job"

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HAROLD L. BOND COMPANY, 383 W. ATLANTIC AVE. BOSTON, MASS.



Made for Long Service

The paint that is cheapest "by the gallon" is dearest by the year, because you have to repaint oftener, using up more labor and material than when you use

DIXON'S SILICA GRAPHITE PAINT

which "lasts longer" and therefore is the most economical in labor and material PER YEAR OF SERVICE. Insist on Dixon's Silica-Graphite Paint made in First Quality for over Fifty Years. Four colors. Recommended and used for metal and wood protection. Write for Booklet No. 107-B.

Made in JERSEY CITY, N. J., by the
JOSEPH DIXON CRUCIBLE CO.
Established 1827

EASY-TO-REA
Hinged-Lid Meter Setti

DON'T LET YOUR METERS FREEZE.

Use Easy-To-Read Meter Settings.

Hinged-lid. Lowest in cost of installation.

GUARANTEED NOT TO FREEZE.

McNutt Yoke. Simple and convenient. No union or screw connections. Used both for basement and curb setting.

Write for full information.

LEWIS McNUTT
28 McNutt Bldg.
Brazil. Indiana



ght—Power—Water—for this Small Town



MUNICIPAL PLANT AT ST. CLOUD, FLA.

economically given by its

FAIRBANKS-MORSE POWER PLANT

consisting of two 100 H. P. "Y" oil engines, generators, exciters, motors and pumps.

All this equipment is the proven product of one reliable manufacturer—no divided responsibilities.

"Y" oil engines operate on low priced fuel oils.

FAIRBANKS, MORSE & CO.
Chicago – Manufacturers

Engines, Motors, Pumps, Scales, Lighting Plants, Water Systems, Hoists, Air Compressors, etc.

Deming POWER PUMPS for Municipal Needs

TYPICAL REPORT—"The Deming Triplex Pump installed at our San Pablo Station has been operated st constantly for the past five years and has given excellent service. The cost of maintenance and rs has been practically nothing and it is still in excellent condition." Peoples Water Co., Oakland, Cal.

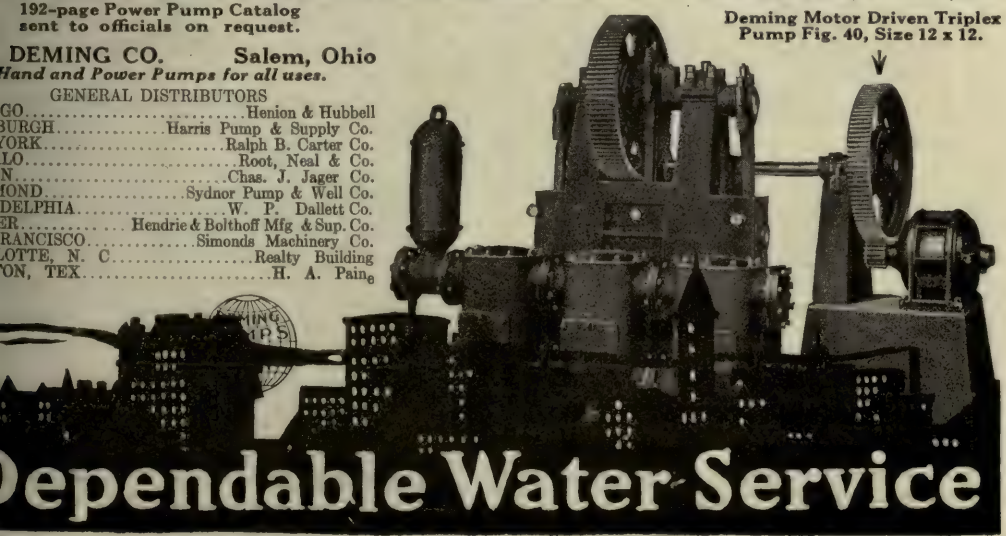
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DEMING CO. Salem, Ohio
Hand and Power Pumps for all uses.

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Deming Motor Driven Triplex Pump Fig. 40, Size 12 x 12.



Dependable Water Service

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WRITE FOR TRIAL METER

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ADVANTAGES OF USING WATER METERS
MODEL WATER METER SPECIFICATIONS
FACTS AND FIGURES ABOUT OUR METERS IN SERVICE
AMERICAN AND NIAGARA WATER METERS
WATER METER ACCESSORIES
SETTING AND TESTING WATER METERS
PRICE LIST WATER METERS AND ACCESSORIES

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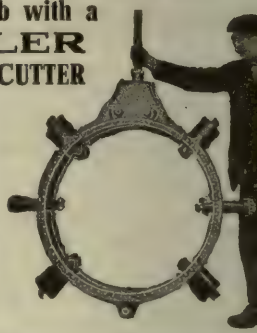
HERSEY DETECTOR METER

The Hersey Detector Meter has been accepted for thirteen years in 3, 4, 6, 8, 10 and 12 sizes without any restrictions or conditions of any kind by every Insurance Company, Stock and Mutual, doing business in the United States, and by the water Departments and Water Companies in more than 600 Cities and Towns for use on over 4,000 Fire Services protecting over $2,000,000,000 worth of Insured Property.

HERSEY MANUFACTURING COMPANY

BOSTON NEW YORK CHICAGO COLUMBUS, O
PHILADELPHIA ATLANTA SAN FRANCISCO

Cut that *Next* Job with a
STRICKLER
RATCHET PIPE CUTTER



You will be surprised at the speed. At the Smooth, Clean, Square Cut. No filing or reaming after the Automatic Strickler has done its work. Each size cuts a range of pipe sizes.

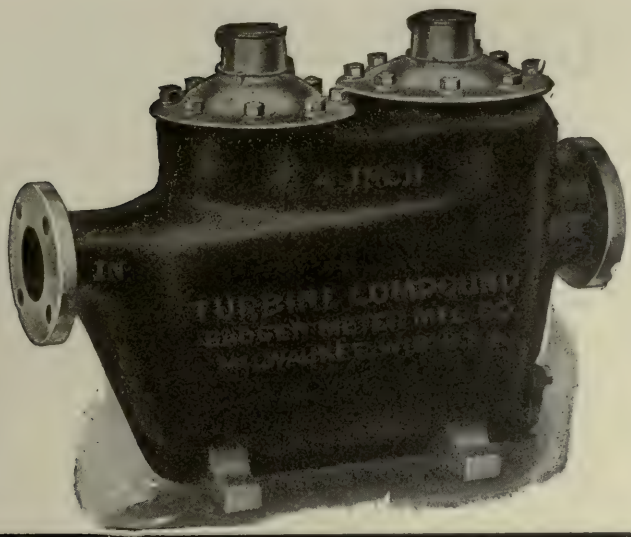
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W. W. STRICKLER & BROS., Columbus, Oh

NEW YORK CHICAGO
Keystone Arctic
Keystone Compound
Eureka Utility
COLUMBIA, S. C.

Water Meters

Pittsburgh Meter Co.
East Pittsburgh, Pa.
LOS ANGELES SEATTLE



THE BADGER METER

Gives Most Service and Least Trouble

The water meter that will keep accurate records and give the most service with little trouble and maintenance expense is the Badger Meter.

Perfect workmanship and excellent finish are characteristic of all Badger Meters.

Every Badger Meter is carefully tested by actual operation before it is sent forth with our binding guarantee for accuracy.

No test is considered satisfactory until the meter has properly recorded on both large and small flows.

Upon receipt of your name and address, a neat little booklet on water meters will be sent you free.

The Badger Meter Mfg. Co.
MILWAUKEE, WIS.

SAVE COAL

ALL GOVERNMENT BUILDINGS ARE METERED.

YOUR CITY CAN HELP SAVE

Saving Water Means Saving Coal, Machinery and Labor. Saving Coal and Labor Means **Helping to Win the War.**

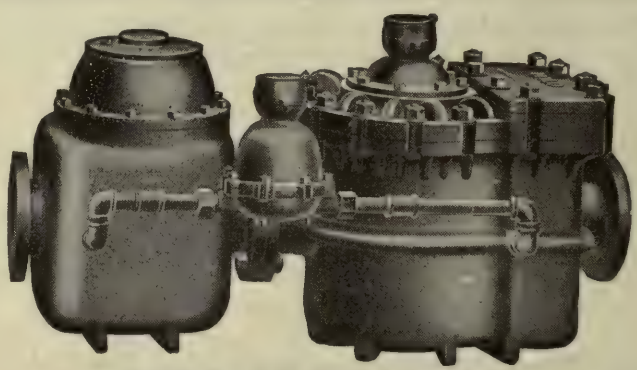
The installation of Lambert Water Meters will save the water which conserves the coal and labor.



Why not specify Lamberts and get the best?

Thomson Meter Company
100-110 Bridge Street
BROOKLYN, N. Y.

SAVE SAVE



Compounding Valve Attached to Nilo Meter

The Union Compounding Valve Makes it Possible for any Large Meter to Register the Trickle as well as the Rush.

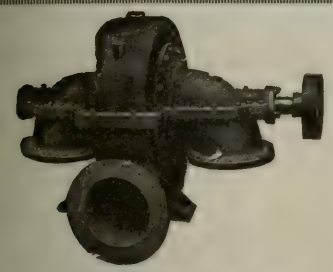
Simply take the valve and the small meter and attach them to the large meter, and you have an accurate and simple compound meter at a remarkably low cost.

Write for further information.

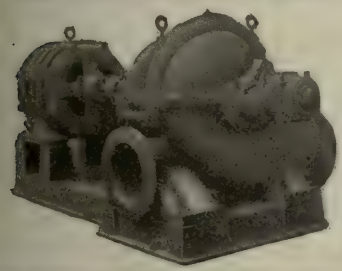
UNION WATER METER CO.
WORCESTER, MASS.

WORTHINGTON

a big line to choose from—a safe line to choose



WORTHINGTON
CENTRIFUGAL PUMPS



Conserve man-power coal and machinery—

ECONOMY all along the line is the watchword of the nation. Economize in your pumping costs by employing Worthington pumps. Whichever type your conditions of service require, power, steam or centrifugal, you can depend on a pump chosen from the Worthington line to operate with less attention, less upkeep and repairs, and less fuel consumption.

Bulletins covering any or all types of pumps, sent on request.

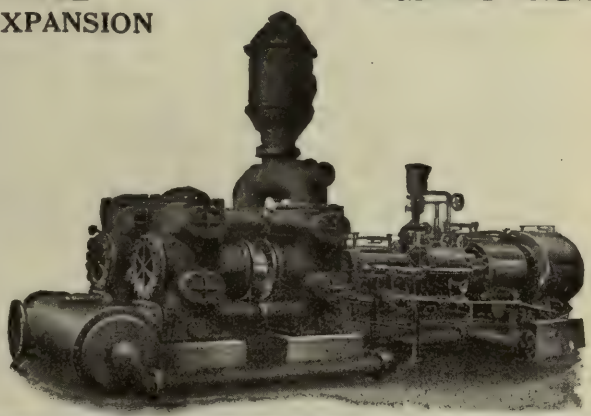
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115 BROADWAY, NEW YORK
Branch Offices in all Principal Cities. I 88.8

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(TRADE MARK)
TRIPLE-PLUNGER
ARTESIAN
WELL
PUMPS

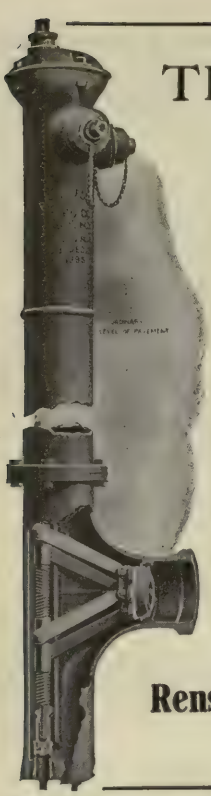


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WORTHINGTON
TRIPLE
EXPANSION
WATER WORKS
PUMPING ENGINE



WATER WORKS PUMPING MACHINERY



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"Bulletin A"

should interest you if you use the

"Corey" Hydrants

SEND FOR IT

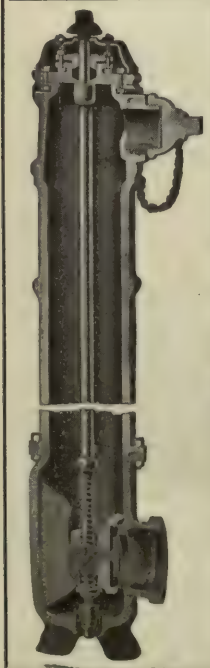
Rensselaer Valve Co.
TROY, N. Y.

R.D. Wood & Co.
PHILADELPHIA, U. S. A.

ENGINEERS
IRON FOUNDERS
MACHINISTS

Pipe, Hydrants, Valves, Gas Producers, Pumps, Gas Work Materials

FIRE HYDRANTS



Frost-Proof
Simple-Efficient

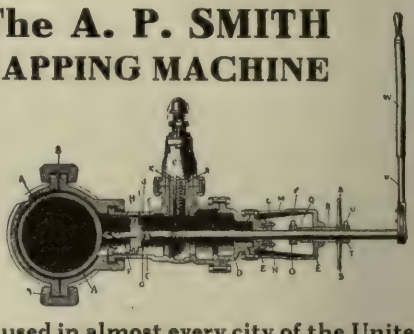
All parts removable without digging up hydrant. Special device prevents street from being flooded should stand pipe be broken. Minimum expense to install and maintain.

LUDLOW
GATE VALVES
FOR
Water, Steam Gas, Oil, Hydraulic or Electric Operated
All styles, any size, all pressures

THE

Ludlow Valve Mfg. Co.
TROY, N. Y.
Branch Offices
New York Chicago Boston Philadelphia Pittsburg Kansas City

The A. P. SMITH TAPPING MACHINE
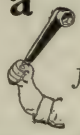


is used in almost every city of the United States and Canada, and giving perfect service.

Connection can be made to existing main without cutting off the pressure. New Hydrants can be set without disturbing the supply. Fittings used with machine cheaper than the regular tees and crosses.

Also makers of: Fire Hydrants, Brass Goods, Valve Inserting Machines, Tapping Apparatus. Corporation Tapping Machines and other water works goods.

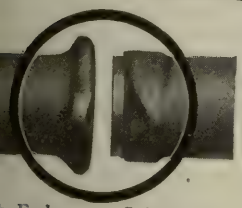
The A. P. Smith Mfg. Co.
East Orange, N. J.

ANY MAN a joint maker

with just this  *for equipment and*

UNIVERSAL CAST IRON PIPE

Can be laid anywhere—any time—under any conditions. Tested and approved for Fire Protection by the National Board of Fire Underwriters



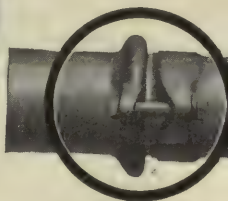
End Spigot End



Spigot End Entered in Hub



Bolts in Position



The Finished Joint

The Pipe and Joint are cast iron. The contact surfaces of the hub and spigot ends are machined on a taper, giving a natural iron to iron joint.

PIPE AND JOINT ARE 'ONE'

Tightening Bolts with Ratchet Wrenches



Leakproof *Permanently Tight*

Flexible

Durable *Strong*

FOR EVERY SERVICE

Water — Refrigeration
Gas — Exhaust Steam
Sewage Disposal
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Oil Condenser Coils — Heating
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and all other classes of service — in buildings — underground

The Finished Line (Standard lengths only)



U277 *Write today for illustrated literature and full information regarding*

"UNIVERSAL—The Cast Iron Pipe That's Different"

THE CENTRAL FOUNDRY COMPANY 90 WEST STREET NEW YORK

SALES OFFICES:—NEW YORK, CHICAGO, ATLANTA, DALLAS, SAN FRANCISCO, KANSAS CITY, MO.
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ANNISTON, ALA.—BESSEMER, ALA.—HOLT, ALA.—VINCENNES, IND.

Trade **LEADITE** *Mark*
Registered U. S. Patent Office

For Jointing Cast Iron Water Mains

NO CAULKING required

Saves 50% to 65%

Write for information and price

THE LEADITE COMPANY, Inc.
198 S. Broad Street **Philadelphia, Pa.**

The Best Material for CALKING Joints in Cast Iron Pipes is

Ulco Lead Wool

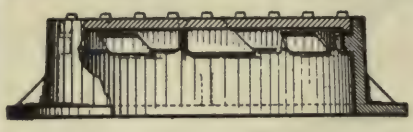
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UNITED LEAD COMPANY
111 BROADWAY, N.Y. CITY

P&C CO **VALVES & HYDRANTS** P&C CO

of UNUSUAL QUALITY — for UNUSUAL SERVICE

Pratt & Cady Co., Inc. Write for Catalogue **Hartford, Conn.**



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80 N. La Salle Street **Chicago, Ill.**
We manufacture Manhole, Catch Basin and Sewerage Castings of all Kinds. We make anything in Gray Iron. Write for our prices.

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GATE VALVES **EDDY** **FIRE HYDRANTS**

Hydraulically and Electrically Operated Valves and Sluice Gates. Valves Designed For All Kinds of Service.

EDDY VALVE COMPANY, WATERFORD, N. Y.

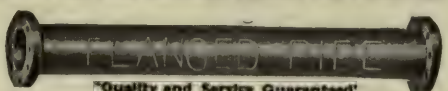
New York **Chicago** **Boston** **San Francisco** **Philadelphia**

COLUMBIAN IRON WORKS
CHATTANOOGA, TENN.
Manufacturers of Fire Hydrants, Valves, Valve Boxes, Sluice Gates, Meter Boxes and Water Works Supplies
ESTIMATES PROMPTLY FURNISHED

Manufacturers of **CAST IRON PIPE**



for WATER—GAS—CULVERTS—SEWERS
Special Castings:-Also Flexible Joint Pipe-Cylinders-Tubes, Milled and Plain Ends-High Pressure Fire Service Pipe.



"Quality and Service Guaranteed"

WARREN FOUNDRY & MACHINE CO

Sales Offices: 11 Broadway, N.Y. 201 Devonshire St., Boston, Mass.
Works: Phillipsburg, N. J.

Chapman Valves and Accessories

Everything for Water Works and Sewage Disposal but the Pipe.

Corporation and Curb Cocks.

Goosenecks—made up with Anderson couplings which eliminate wiped joints.

Gate Valves Sluice Gates Hydrants

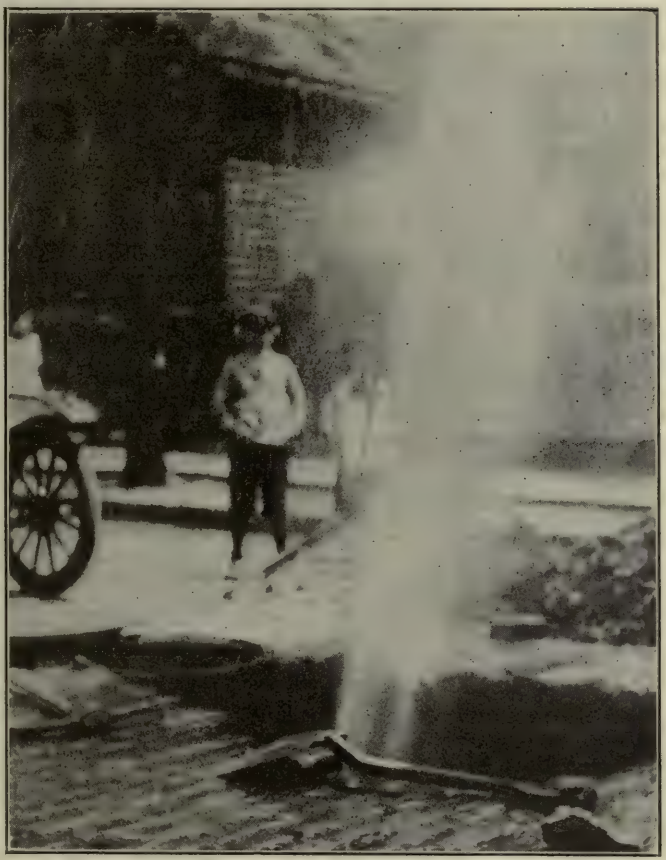
Catalogue containing valuable information free on request.

Write Today

THE CHAPMAN VALVE MFG CO.
INDIAN ORCHARD, MASS.

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Nobody suspected this leak until THE PITOMETER discovered it. Just think of the tremendous quantity of water which was going to waste every day. THE PITOMETER put an end to this and many other similar leaks.



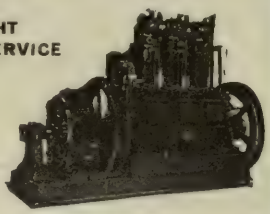
If you want to avoid waste in your mains and in your pumping plant as well, write to THE PITOMETER CO., 55 Duane St., New York, for an illustrated booklet showing what the COLE PITOMETER SYSTEM can do for your water supply system.

THE FOOS

WATERWORKS
ELECTRIC LIGHT
and POWER SERVICE

Fuels
Producer Gas
Natural Gas
Kerosene

Sizes
6 to 325 hp.



THE FOOS GAS ENGINE CO. SPRINGFIELD, OHIO

MICHIGAN PRODUCTS

Fire Hydrants
Gate Valves
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Check Valves
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Valve Boxes

FLOWER-STEPHENS MANUFACTURING COMPANY
103 Parkinson Street, Detroit, Mich.

Points of Advantage
The Adjustable Manhole Top

st Instantly brought to grade at installation.
nd Quickly re-adjusted without excavation.
rd Wears longer.
th Cover does not rattle or become displaced—Wears uniformly with frame.
th Cost of Replacements reduced 60% in material and labor. Quick shipments.

S. E. T. Valve & Hydrant Co.
Hudson Terminal Bldg., New York
Cast Iron Specialties for Improved Municipal Street Service

"PREPAREDNESS

is practised by the WATER WORKS MANAGER whose equipment includes a full line of REPAIR SLEEVES of all sizes for his different sized mains, to repair the ravages made by JACK FROST on his pipe lines during the Winter Season.

Repair Sleeves can be had for both center and bell end of pipe and in various lengths to meet conditions."

Water Works Equipment Co.
50 Church St. New York

ORIGINAL
OF COURSE WE HAVE IMITATORS
YOU KNOW WHY—

the Clark Meter Box has *made good* in 25 years of actual service. Thousands of water departments use it. No other "*Just As Good*" Can't Be.

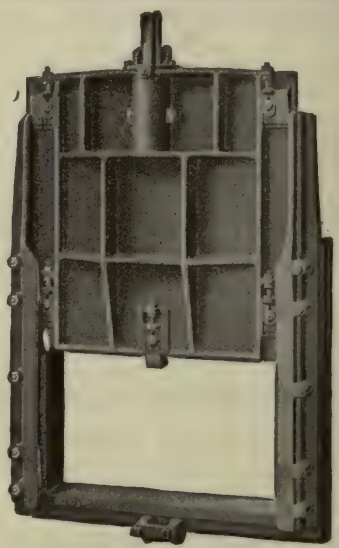
Prices are the lowest. Quick delivery. Other Clark Goods are in same class.

THE CLARK METER BOX
Trade Mark

H. W. CLARK CO.
130 So. 17th St., Mattoon, Ill.
Everything for the Water Works
New York Salt Lake City
San Francisco Chicago

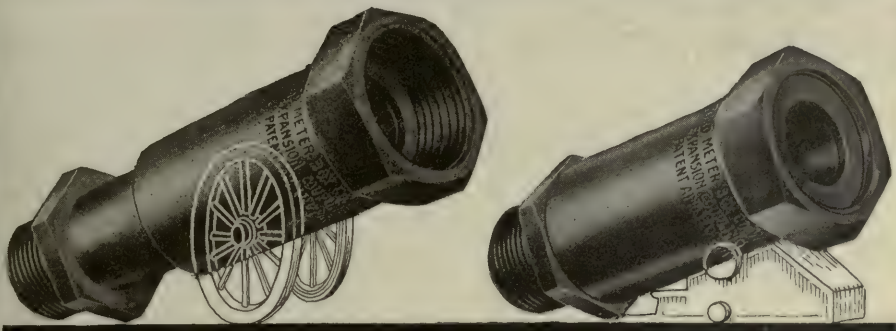


GRAVITY **FILTERS** PRESSURE
WATER SOFTENING PLANTS AND HYPOCHLORITE APPARATUS
ALL VARIETIES OF
CHEMICAL FEEDING DEVICES
Write for Bulletin 17-3
THE NEW YORK CONTINENTAL JEWELL FILTRATION CO.
NUTLEY, N. J.



Sluice, Head and Penstock Gates
Flap and Shear Valves
The kind that don't wear out

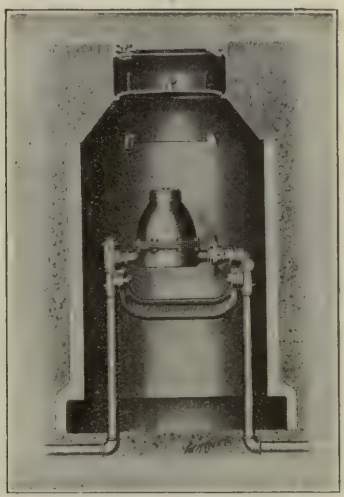
COLDWELL, WILCOX COMPANY
Water Street Newburgh, N. Y.



No—These Aren't New Long Range Cannon

They are only a couple of illustrations of the Ford Flexible Expansion Couplings for water meters. Three sizes are made for ⅝, ¾ and 1 inch meters. May be used in connection with ½, ¾ and 1 inch pipe. These couplings can be used in practically any place where flexibility is required in water, gas and steam piping. Will stand 300 pounds pressure without leaking.

If interested in these couplings—or in Ford Meter Boxes, Ford Meter Testers or Ford Meter Settings, send us your address and we will send you our catalog.



FORD METER BOX CO.,
Wabash, Ind.

MATHIESON ALKALI WORKS, Inc.

Niagara Falls, N. Y.

Castner Electrolytic Process

Eagle-Thistle Brand

CHLORIDE OF LIME

In 200, 450 and 750-lb. drums Strongest, quickest-settling, most reliable.

LIQUID CHLORINE

Pure anhydrous, for use with any control apparatus. In improved and convenient cylinders, 105 and 150 lbs. net.

ARNOLD, HOFFMAN & CO., Inc.

Sole Agents

Boston **Providence** — **61 Broadway New York** — **Philadelphia Charlotte, N. C.**

Do You Know

that for 2 cents a year per capita you can insure every man, woman and child in your City or Town against the ravages of Typhoid and other water-borne disease?

Liquid EBC Chlorine

The 100% Sterilizing Agent

is destroying these disease germs in hundreds of communities in the United States and lowering the typhoid death rate from 30% to 70%.

It makes drinking water safe

Write for our illustrated booklet "The Wise Cities." It explains.

ELECTRIC BLEACHING GAS COMPANY

18 East 41st Street, New York

Canadian Representative:

GENERAL SUPPLY CO., LTD.

Ottawa, Toronto, Montreal, Winnipeg, Vancouver

ACTIVE SERVICE

YEARS OF SUCCESS

Filtration Plants

for

Municipal Needs

Y. M. C. A.'s, Colleges and all Institutions

Write for Booklet

NORWOOD ENGINEERING COMPANY

Florence — **Mass.**

OZONE

The Most Powerful Germicide and Oxidizing Agent Known to Science

PURIFIES WATER

by destroying

ODORS, TASTES and BACTERIA

"THE IDEAL AND PERFECT" ELECTRIC OZONE 3501 S. CHICAGO U.S.A. PURIFIER OF WATER

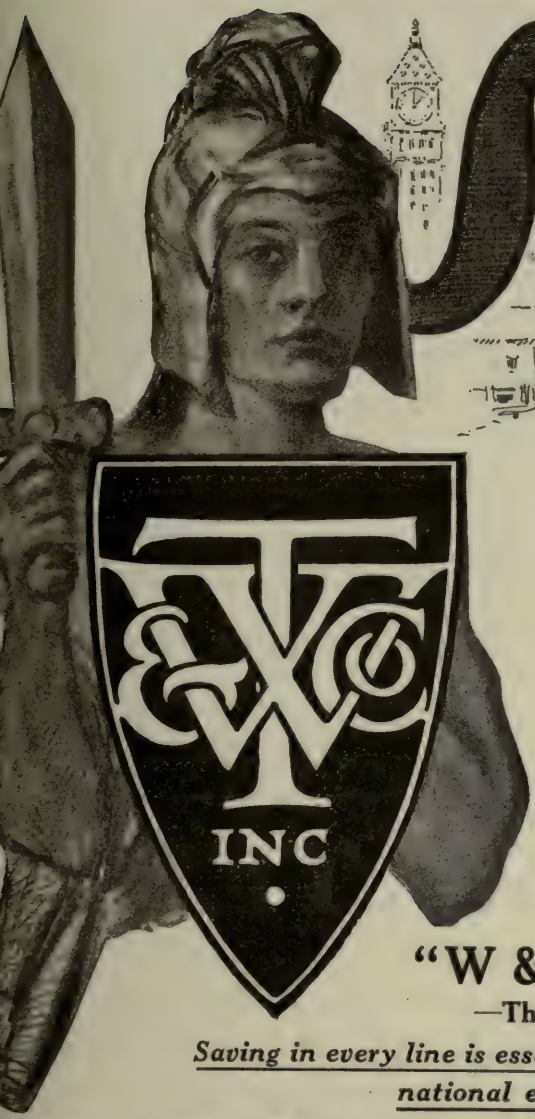
Harmless, Inexpensive, Effective

Mr. Geo. A. Soper in Engineering News, Vol. 42, page 250, says, "The claims made for the ozone treatment of water are as distinct and its functions as clearly defined as are those of filtration and sedimentation. Ozonation aims to eliminate bacteria from water and to destroy unpleasant colors and odors of vegetable origin. It is especially valuable in removing unpleasant odors."

We furnish ozone systems for cities, institutions, etc.

Electric Ozone Sterilizer Co.

53 W. Jackson Blvd., Chicago, Illinois



Save

Lives
Health
Money
Trouble
Nuisance

by protecting the water supply of your community with

Liquid Chlorine

the 100% efficient sterilizing agent, controlled and applied by

"W & T" APPARATUS

—The Standard Chlorinator

Saving in every line is essential during the present national emergency

Saving of lives and health by the elimination of typhoid fever and other water-borne diseases through the sterilization of the water by the application of liquid chlorine is more essential than ever before.

"W & T" Equipment will sterilize any water supply so that it will be absolutely safe at an average cost of 17 to 50 cents per million gallons.

Send for interesting Booklets with all the Facts

WALLACE & TIERNAN CO., Inc.

349 Broadway, New York

People's Gas Building, Chicago, Ill.

Canadian Representatives: The General Supply Co., of Canada, Limited, Ottawa, Montreal, Toronto, Winnipeg, Vancouver.

Pacific Coast Representative: Kenneth Shibley, Merchants Exchange Building, San Francisco, Cal.

Chemicals for Water Purification

We manufacture highest grade of

Sulphate of Alumina

also

Chloride of Lime

Liquid Chlorine

PENNSYLVANIA SALT MFG. CO.

WIDENER BLDG. :: :: PHILADELPHIA, PA.

PURE WATER

and

PITTSBURGH FILTERS

are found together

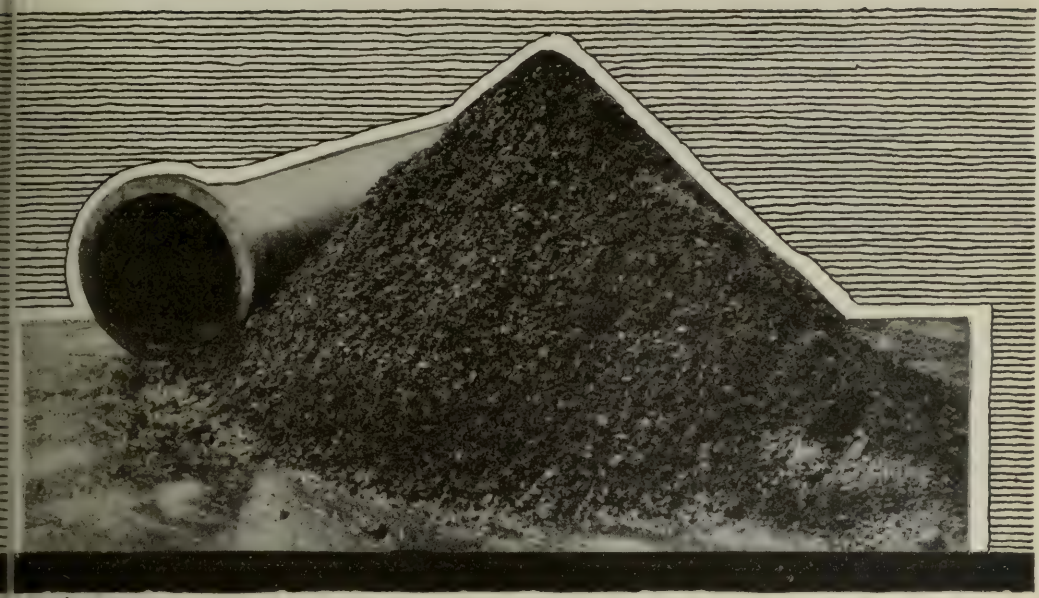
Where Pittsburgh Filters are at work there you will find pure water.

Over 700,000,000 gallons of pure water is being supplied to 180 municipalities and in no way can it be had more surely and at the same time so economically as by the use of Pittsburgh Filters.

Write for booklet

PITTSBURGH FILTER MFG. CO.

Chicago Pittsburgh, Pa. Kansas City



It Is a Safe Bet That You Do Not Appreciate How Much Sediment There Is Incrusted Around the Inside of Your Water Pipe

The pile shown in the illustration above is only a small part of what we removed by the National Method from one set of water pipes on which we were working.

Having your pipe stopped up in this way means unhealthful conditions—reduced pressure for your fire department—and other troubles and expenses, including the laying of new mains. All these troubles can be avoided by arranging with us to clean out your present pipe. Write for free booklet "The Cleaning of the Water Main."

National Water Main Cleaning Company

HUDSON TERMINAL BUILDING

NEW YORK CITY

THE NATIONAL METHOD

—yes, some twenty years ago

Twenty years ago, we made a big lot of Enameled Iron Street Signs for the City of Baltimore, but we haven't sold the City many since—only because

THE TOWN HASN'T NEEDED THEM

The signs we sold them twenty years ago are still doing business—that's the economy of "BALTO" Guaranteed Porcelain Enameled Iron Municipal Signs.

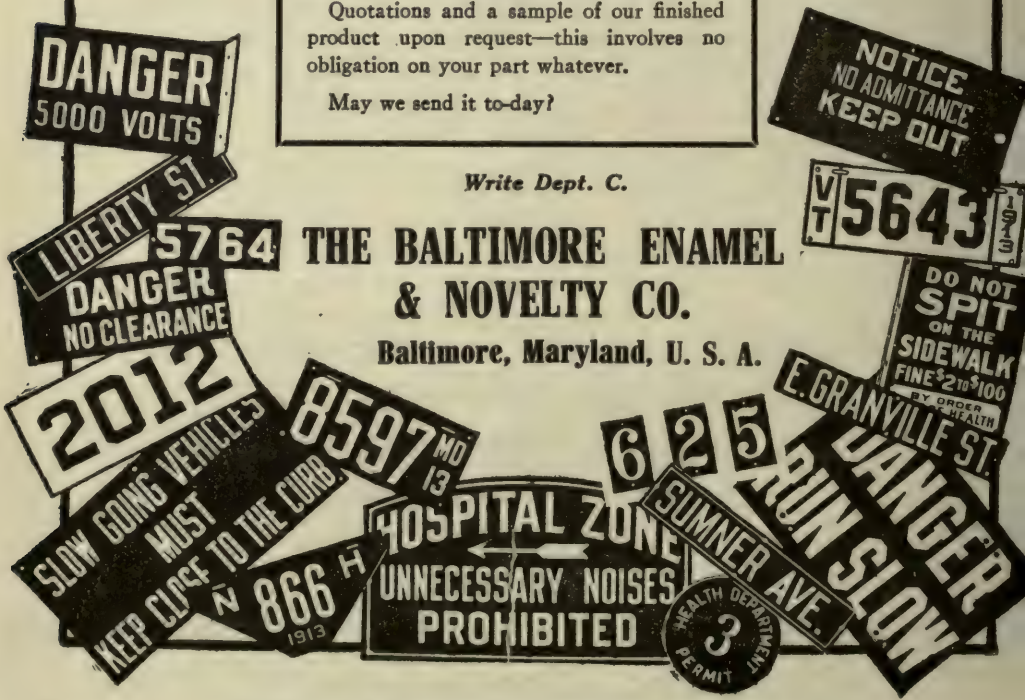
That's the proof that there is no "just-as-good."

If you can afford to experiment with low prices (?) you're fortunate, but the taxpayer pays the freight. Our product is the one absolutely dependable out-of-door municipal sign on the market, and we can prove it if given half a chance.

GIVE US THE CHANCE TODAY

Quotations and a sample of our finished product upon request—this involves no obligation on your part whatever.

May we send it to-day?



Write Dept. C.

THE BALTIMORE ENAMEL & NOVELTY CO.

Baltimore, Maryland, U. S. A.

DU PONT AMERICAN INDUSTRIES



Paint Through Rust—Not Over It

Rust is a metal eater.. To paint **over it** is self deception. The destructive action still continues underneath the paint. The only efficient way to stop this evil is to paint through the rust.

Mark X before subject that interests you and Mail This Coupon to
E.I. du Pont deNemours & Co. Advertising Division
Wilmington, A. C. Delaware

- ___ Antoxide Iron Paint
- ___ Town & Country Paint
- ___ Sanitary Wall Finish
- ___ Vitrolac Varnish
- ___ Vitrolac Stain Finish
- ___ Flowkote Enamel
- ___ Liquid Light for Mills
- ___ Py-ra-lin Toilet Goods
- ___ Challenge Collars
- ___ Fabrikoid Upholstery
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Name .....
Address .....
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HARRISON'S ANTOXIDE

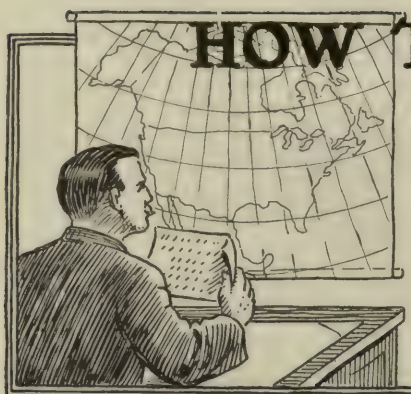
(A du Pont Product)

is a foe to rust. It stops rust's action, because it permeates the rust or scale, checks its progress and actually protects the metal underneath. It preserves the metal from oxidization because it effectively safeguards the surface from air and moisture. For this reason, it is incomparable for painting iron fences, drains and all kinds of metal work. Comes in five standard shades—red, bronze, green, maroon, and black.

Check Antoxide in the coupon. Sign and send it in. Get the full information.

HARRISON WORKS
Owned and Operated by
E. I. Du Pont de Nemours & Co.
WILMINGTON, DELAWARE
Philadelphia, Boston, New York, Chicago, Minneapolis, Kansas City
Visit the Du Pont Products Store, Atlantic City, N. J.

DU PONT



HOW THEY DO IT IN OTHER PLACES

Valuable Illustrated Material, Statistics, Etc., Regarding Methods, Materials and Appliances for Public Improvement Work, Sent Free of Charge

Manufacturers, engineers and others doing business with municipalities are invited to submit catalogs or circulars suitable for mention in these columns. THE AMERICAN CITY *should always be mentioned when writing for this material. Officials who check over these items each month and write for such printed matter as interests them will find this a convenient way of keeping their information files up to date.*

An Electric Fire Whistle.

The Federal Sign System, Lake and Desplaines Streets, Chicago, has issued a 10ur-page booklet telling about the Federal Fire Alarm Siren, its functions, its installation and its operation. Illustrations of the siren are included.

A Pipe Placing Machine.

Lewis McNutt, of Brazil, Ind., states that there is no need to tear up your streets and lawns when placing pipes, for with the McNutt Pipe Placing Machine one man can do the work of removing old service pipe or of putting in new, with no digging except an excavation 48 inches long where the machine is placed and a short trench at the point to be reached. The machine places the pipe by pulling it to position.

A Vertical Meter Frame.

In a four-page pamphlet the Ford Meter Box Company, of Wabash, Ind., announces and illustrates the Ford "Ramshorn" meter holding yoke, for the installation of water meters on vertical pipes in basements.

Drinking Fountains and Street Lamps.

The 1918 catalog of The Casey-Hedges Company, Chattanooga, Tenn., illustrates the company's extensive line of drinking fountains suitable for parks, schools and all purposes where sanitary drinking accommodations are desired. Pictures are also shown of various attractive designs of street lighting poles for business and residence districts.

"A Guide to Boiler Economy."

Fuel is the principal source of expense in the production of power. With the present price and shortage of fuel there is need to economize. The General Electric Company, of Schenectady, N. Y., issues a booklet with the above title with the purpose of showing how a steam-flow meter installed on each boiler makes it possible to operate them more scientifically and by so doing obtain better efficiencies and save fuel.

Rubbish Cans for Streets and Parks.

The Rochester Can Company, of 103 Hague Street, Rochester, N. Y., has issued a catalog, F-918, illustrating several styles of rubbish cans, street cans, can carriers and street scrapers. The cans are made from extra heavy galvanized sheets, reinforced at top and bottom, with or without hoods or covers.

Seeds and Bulbs.

The 1918 catalog of J. M. Thorburn & Company, 53 Barclay Street, New York City, shows a variety of bulbs and seeds with directions for culture.

Lead Wool and How to Use It.

The United Lead Company, of 111 Broadway, New York City, has issued a pamphlet setting forth the superior qualities of Ulco Lead Wool as a calking and waterproofing material. It is claimed that Lead Wool can be used in wet trenches and under water and requires no heating. The company is prepared to give practical demonstrations of the value of Ulco to those interested.

Pneumatic Water Systems.

Fairbanks, Morse & Company, Chicago, Ill., furnish free of charge an illustrated catalog relative to their pneumatic water systems and automatic water pumps, also power heads for deep wells.

Power Plants for Municipal Service.

The catalog of The Scofield Engineering Company, Ph delphia, Pa., which specializes on the construction water-works and electric lighting plants, will be of terest to all municipalities which are considering the e tion or extension of such plants.

Sewage Ejectors.

In "Pumping Machinery," Yeomans Brothers' Compa of 225 Institute Place, Chicago, general sales agents the Shone Company, have described several of the Sh automatic pumps, three of which are ejectors for a matically raising sewage and drainage from basements low the street level, municipal sewerage systems, Letters of endorsement of the Shone Sewerage Ejec (Bulletin No. P-4,000) have been reproduced, show its satisfactory use in several large municipalities, o buildings, stores and hotels.

Calculating Machines for Municipal Offices.

In a little booklet entitled "Why They're Buying Th Now," the Marchant Calculating Machine Company, Emeryville, Cal., has reproduced some of the letters ceived from satisfied buyers of the Marchant calculat machine, among whom are many city and county office The machine is also used by the United States gove ment. Styles and prices of machines are included.

Don't Tear Up that Old Roof.

"Save it—treat it with Stormking-Liquid," says the E ciency Products Company, Department C, 38 Fult Street, New York City. This preservative is fireproof a adaptable for use on roofs of any description. Its se liquid consistency enables it to flow in between the p ticles of gravel or slag, and between the corrugations o metal roof, thoroly sealing every hidden hole, crack crevice.

Landscape and Park Planting.

A 4-page folder gives a list of the stock of shade tre shrubs, vines and creepers and ferns carried by the Riv view Nursery & Seed Company, Rt. 2, McMinnvil Tenn., with prices in lots of ten, a hundred or thousand.

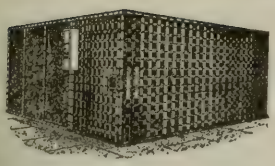
Road Building.

Those interested in building roads efficiently should the catalog of the Russell Grader Manufacturing Co pany, of Minneapolis, Minn. Here are illustrations a descriptions of road-building machines, culverts a bridges. Diagrams of the machines and illustratio showing the different kinds of work the machines a capable of doing are attractive features of the catalog.

Fire Hydrants.

"Mathews' Patent Fire Hydrants," single and doub valve, are presented in a pamphlet issued under the abo title by R. D. Wood & Company, Philadelphia, Pa. addition to the standard hydrant, attention is also call to high-pressure hydrants, hydrants with crane attachme fire-boat hydrants, independent gate valves for hydra nozzles, couplings, tropical hydrants, service boxes a indicator posts, and various types of valves and screens.

Continued on page 36.



Ornamental Wire, Iron and Brass Work

Send for our Illustrated Catalogue

Jail Cells and Jail Work, Cemetery Entrances and Fence, Mausoleum Doors and Equipment, Fire Escapes, Flag Poles, Park Settees, Lawn Furniture.

Consulting with us about your problems and asking for estimates does not place you under any obligation whatever.

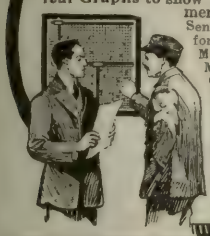
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...atement of the Ownership, Management, Circula...on, etc., Required by the Act of Congress of August ..., 1912, of The American City (Town and County ...dition), Published Monthly at New York, N. Y., ...ctober 1, 1918.

...ate of New York, County of New York, ss.:

Before me, a Notary Public, in and for the State and ...unty aforesaid, personally appeared EDGAR J. BUTTENHEIM, who, having been duly sworn according to law, deposes and ...ys that he is the Business Manager of THE AMERICAN CITY (Town and County Edition) and that the following is, to the best of his knowledge and belief, a true statement of the ownership, ...anagement, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, em...died in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, manag... editor, and business manager are:

...blisher	THE CIVIC PRESS, Inc., 154 Nassau St., N. Y. C.	
...itor	HAROLD S. BUTTENHEIM,	" "
...anaging Editor	HAROLD S. BUTTENHEIM,	" "
...siness Manager	EDGAR J. BUTTENHEIM,	" "

2. That the owners are: (Give names and addresses of individual ...vners, or, if a corporation, give its name and the names and ...ddresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

THE CIVIC PRESS (Incorporated) 154 Nassau St., N. Y. C.
...ockholders: HAROLD S. BUTTENHEIM, EDGAR J. BUTTENHEIM, ...ERBERT K. SAXE, JAMES H. VAN BUREN, 154 Nassau St., N.Y.C., ...ARY B. CASH, Madison, N. J.

3. That the known bondholders, mortgagees, and other security ...lders owning or holding 1 per cent or more of total amount of ...nds, mortgages, or other securities are: (If there are none, so ...ate) None.

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EDGAR J. BUTTENHEIM, Business Manager.

...worn to and subscribed before me this 19th day of September, 1918. JOSEPH R. FUTH, ...otary Public Kings Co., No. 50 Notary Public.
...Certificate Filed in New York Co., No. 122
...N. Y. Co., Registers' No. 10113
(My commission expires March 30, 1918.)

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Valuable illustrated material, catalogs, statistics, etc., as mentioned below, relative to methods, materials and appliances for public improvement work, will be sent free of charge if you mention THE AMERICAN CITY. See also page 34.

The Martin Snow Remover.

The Owensboro Ditcher & Grader Company, Box 1245, Owensboro, Ky., has issued a circular about a very ingenious and inexpensive machine which acts as an efficient snow plow in winter and as a ditcher and road grader in summer; a combination most useful for every city, town and county.

Safety Lines on Paving.

L. Sonneborn Sons, Inc., Department 27, 264 Pearl Street, New York, are distributing literature and free samples of Cemcoat, an enamel paint which is particularly adaptable for safety lines on pavements, also for use as a washable sanitary wall-coating for schools, bath houses, police stations, jails, etc.

Concrete Mixers for Sidewalk, Curb and Gutter Work.

Here are letters from concerns in all parts of the country compiled into a little booklet entitled "Getting Results," by the Jaeger Machine Company, of 215 West Rich Street, Columbus, Ohio. These concerns are much pleased with their Jaeger concrete mixers and they tell what they have been able to accomplish with them.

Lawn Mowers and Lawn Cleaners.

This catalog of lawn mowers, sprinklers, trimmers, grass catchers and lawn cleaners should interest those authorities who have the care of parks under their supervision. Both hand-driven and horse-drawn motors are described. Copies of the catalog may be obtained from the Pennsylvania Lawn Mower Works, 1615-35 North Twenty-third Street, Philadelphia, Pa.

A Calendar for Public Officials.

The Philip Carey Company, Lockland, Cincinnati, Ohio, is publishing an interesting monthly calendar, which will be sent the first of each month to any city or county officials interested in paving, bridges, etc.

Snow Plows.

The Baker Manufacturing Company, Springfield, Ill., is distributing a special folder relative to its snow plow attachment for motor trucks, also illustrating and describing its horse-drawn snow plow for roads or sidewalks, using either one or two horses.

Sand Testing Instrument.

A booklet entitled "Watch Your Sand" has been issued by Kolesch & Company, 138 Fulton Street, New York City, calling attention to the importance of testing all sand in concrete work.

Leadite for Pipe Joints.

The Leadite Company, Inc., 100 South Broad Street, Philadelphia, Pa., will send on request its printed matter describing the economy and reliability of "Leadite" for jointing cast iron water mains.

Hydrants With Special Features.

The Ludlow Valve Manufacturing Company, Troy, N. Y., publishes a complete catalog descriptive of valves and hydrants, and is ready to furnish information, drawings and prices to suit particular requirements.

Snow Removal.

Bulletin K. D. T., just issued by The Good Roads Machinery Company, Kennett Square, Pa., illustrates and describes its full line of snow-handling machinery for use on city streets and sidewalks, county roads, etc.

Standpipes for Municipalities.

Town and village officials and water-works superintendents will be interested in the catalog of the Chicago Bridge and Iron Works, Chicago, Ill., showing the standpipes which they manufacture for water supply and fire protection.

Has Your Town an Honor Roll?

Cities or villages interested in an attractive and permanent record of the soldiers and sailors who have represented them in the war should write to the Lebanon Machine Company, of Lebanon, N. H., for illustrations and particulars regarding the Municipal Honor Roll which it is manufacturing. This tablet is built in sectional form, and new names can be added as desired.

Water-Waste Surveys.

The Simplex Valve & Meter Company, of 112 North B Street, Philadelphia, Pa., will send on request illustr printed matter regarding its Pitot Tube Recorders making water-waste surveys. Also, if desired, inform will be sent regarding this company's meter registers use with Venturi tubes.

Saving Coal by Using Meters.

Officials concerned with the large saving of coal and other decreased expenses for machinery, labor, etc., possible by the installation of water-meters will be terested in the catalog of the Thompson Meter Comp 100-110 Bridge Street, Brooklyn, N. Y.

"More From Your Land"

is the title of a beautiful colored booklet issued by E Nurseries, Westbury, L. I., which will be of interes every public official, as well as to private citizens terested in making the best use of the land which occupy, by the planting of ornamental trees and sh as well as fruit trees.

Hydraulic Valves for Water-Works.

The Johnson hydraulic valve is illustrated in a bul being distributed by the Larner-Johnson Valve and gineering Company, Philadelphia, Pa. This valve is cially valuable for water-works use, and full informa regarding it will be sent any municipal or water-w official who is interested.

Rotary and Centrifugal Pumps

are illustrated and described in the catalog of the T Pump Company, Buffalo, N. Y. These pumps are able for water supply and, in fact, for practically e purpose for which pumping outfits can be used.

Wire and Cable.

The Hazard Manufacturing Company, of Wilkes-B Pa., will send on request its catalogs of rubber-insul wire and cable suitable for all municipal purposes, cluding fire and police alarm systems, street lighting, The Hazard Company has specialized on insulated and cables for a period of twenty years.

Wanted—A Federal Road Building Commission.

This is the title of an illustrated article by E. L. Bo in the last issue of the *Packard Truck Digest*, which special interest to all those realizing the present necessity for better roads and streets. A copy of issue of *Digest* can be secured by sending your add to the Packard Motor Car Company, Detroit, M which will place your name on its regular mailing li you so request.

Street Cleaners and Street Flushers.

The recent influenza epidemic has again directed the tention of municipal officials to the importance of b methods of street cleaning in order to avoid the sp of contagion. Catalogs illustrating and describing e variety of street cleaning and street flushing equipm may be secured free of charge by addressing O. S. rett, Advertising Manager, Studebaker Corporation, S Bend, Ind.

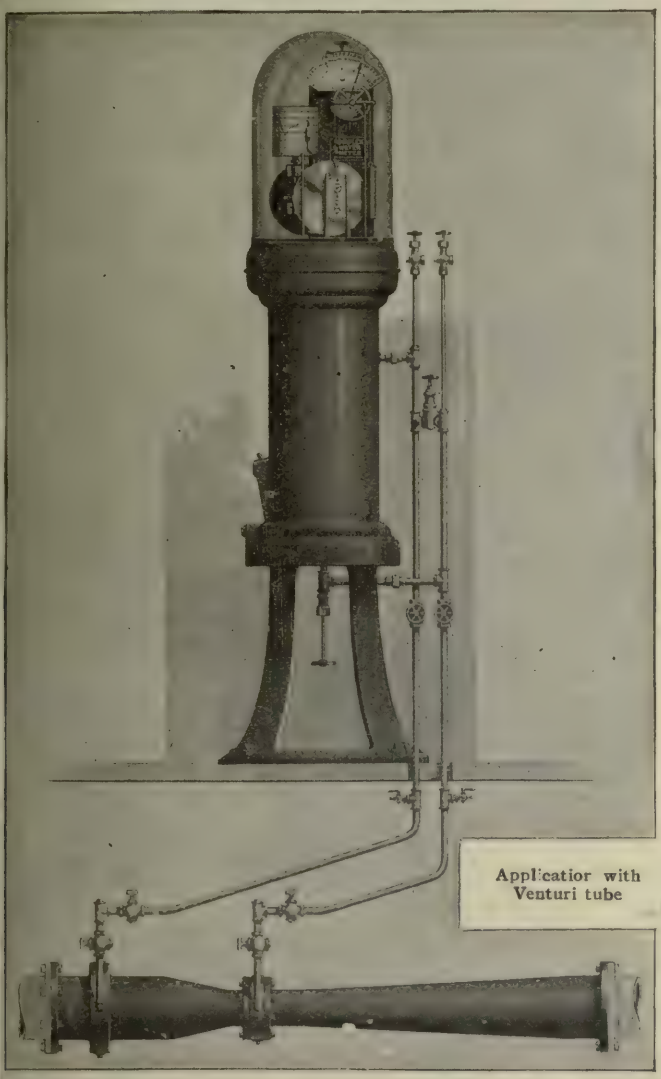
"Truck Talk"

is the title of an interesting magazine edited by J Baird, advertising manager of the General Motors T Company, Pontiac, Mich. Anyone interested in economies of motor truck transportation can secure magazine regularly without charge by making a req for it.

Worthington Water Meters.

The Worthington Pump and Machinery Corporation, Broadway, New York, will send on request its illustr catalog showing a complete line of water meters suit for both large and small services.

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In metering fluids this company has adopted for its standard the elimination of friction. Its type "G" meter register is so designed to afford a reliable instrument for use with Venturi tubes of low ratio and consequently low permanent loss of head. This is proved by the fact that it is the only practical instrument on the market that we know of that is used successfully with pitot tubes and under this condition measures accurately velocities down to ½ a foot per second through the main.

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British Experience as to Advertising

From an Address made in New York by Mr. Val Fisher, London Publisher, Member London Chamber of Commerce, Associate Member American Chamber of Commerce, in London.

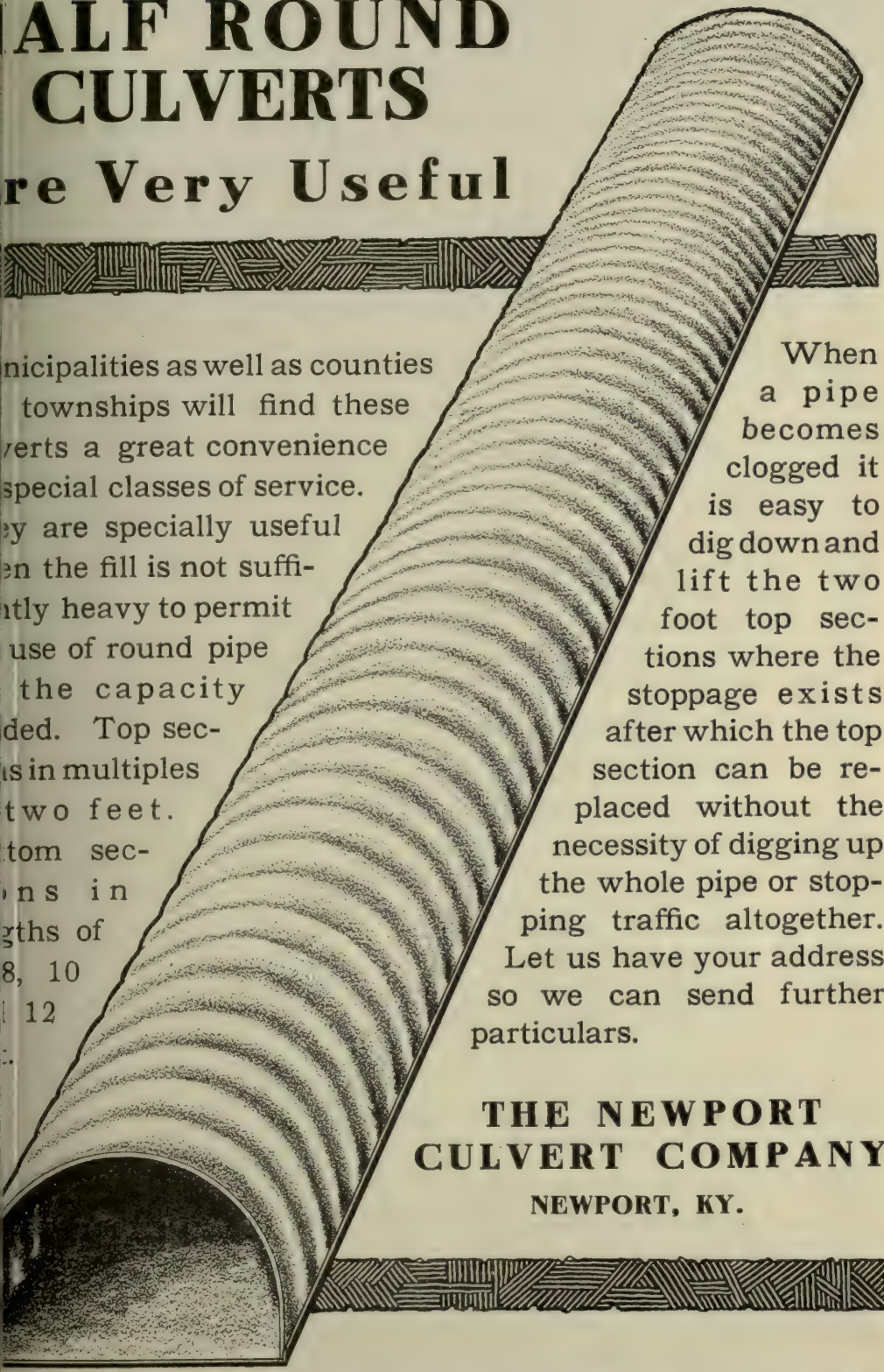
"In the last four years the business men of Great Britain have lear more concerning the importance of building good-will through advertis than they did in forty years preceding the war.

British manufacturers who have not a dollar's worth of merchandise sell, whose entire plants are employed on Government work, are keep their advertising continuously before the public, because while they perfectly willing to turn their profits over to the Government, while t are perfectly willing for the sake of winning the war to have their facto commandeered and their normal business completely stopped, yet they not willing to sacrifice their good-will; they are not willing to have t names or their products forgotten.

And so they continue their advertising, continue building their good-w so that when the war shall be won there will be an immediate demand the billions of dollars' worth of merchandise that their greatly enlar factories will then turn out."

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Get their prices on YOUR Contracts

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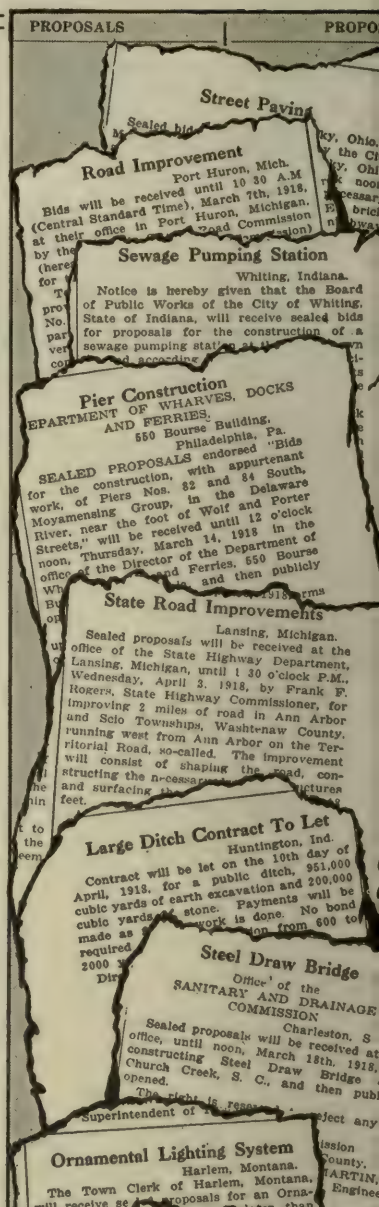
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THEODORE R. KENDALL, Engineering Editor
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THE AMERICAN CITY

Published Monthly by The Civic Press, 154 Nassau St., New York—EDGAR J. BUTTENHEIM, President
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Offices: San Francisco, 320 Market St.—W. A. Douglass, Pacific Coast Representative

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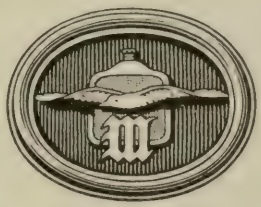
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Two editions of THE AMERICAN CITY are published each month, both containing the same number of pages. The distinction in contents is indicated above. The subscription price of either edition is $3.00. For $1.00 additional per annum, any subscriber may receive both editions; or any subscriber may have his name transferred from the mailing list of the City Edition to that of the Town and County Edition, or vice versa, without extra charge. Canadian subscribers pay 50c extra per year to cover postage; other foreign countries $1 per year extra.

Back numbers of THE AMERICAN CITY are kept in stock by the publishers.



THE WHITE COMPANY

Announces

A Double Reduction Gear Drive In Its Heavy Duty Trucks

Having all the flexibility and leverage of chain drive at its best. The superior leverage of a chain and sprocket, in applying power near the wheel rim by a rolling contact, is obtained in the Double Reduction axle by gears enclosed in the wheels and running in oil.

This is not an Internal Gear Drive with two axles. It is a *Centre Gear Drive* with power transmitted through gears on each end of a single axle. The entire load is borne by a compact housing. The axle shafts are carried in sleeves within the housing and are free to propel the truck without supporting any weight.

The twisting and jolting of uneven roads cannot cramp the driving mechanism. Wedging of gears is impossible.

THE DOUBLE REDUCTION PRINCIPLE

has been a large factor in the efficiency of White 1½—2-ton trucks, so widely used in both commercial and military service. It has long been an engineering problem to adapt it to shaft-driven, heavy-duty trucks. *This has now been accomplished without adding a single pound to the unsprung weight.*

The chassis is clean cut. The rear axle housing is so compact it affords practically the road clearance of a straight axle. The tread is narrower. All parts are easily accessible. Moving parts are so simple and so rugged, dust protected and immersed in oil, that they are proof against rough usage. So frictionless is the whole driving system that the truck's coasting radius has been greatly extended.

White performance has been raised to a new level of efficiency. White operating cost has been lowered to a new level of economy, by a driving system which requires no adjusting whatever and will outwear the truck itself.

The new trucks have been in active service for several months. Deliveries will be made as soon as production in the factory overtakes urgent military needs.

THE WHITE COMPANY
CLEVELAND

TOWN & COUNTY EDITION
of
The American City

Tribune Building
New York

November, 1918

Volume XIX
Number 5

Liberty Buildings

By Dr. Frank Crane

WHEN the war is over and the boys come home, every community will feel like doing something to perpetuate the memory of their participation in the most stupendous enterprise in history. Unless something is done to prevent it, here will probably be an extensive building of monuments of stone and bronze such s now adorn the public squares of so many towns as memorials to the soldiers and ailors of the Civil War.

The sentiment which built these monuments is commendable. It was the effort of community to do honor to its heroes. The judgment, however, that was displayed n selecting this form of commemoration is open to criticism.

Monuments to great men and edifices to commemorate great occasions are as old s civilization. Even our graveyards at present are full of elaborate tombs. But inking people have often doubted whether a mass of useless display is the best form f doing honor to a useful life. Common sense would indicate that the most fitting ay to do homage to the dead is to construct something that shall serve the living.

THE AMERICAN CITY, a magazine devoted to civic ideals, now comes forward with ne suggestion that after the war each town shall erect a "Liberty Building."

Such a building should include facilities for recreation, culture, fellowship, and ublic service. It might include a municipal auditorium which could be used for en-ertainments and drill work. A bronze tablet in the lobby, as the Reading *Herald* uggests, "should sound the note of memory, proclaim the deeds and names of the ome boys and tell of our pride in them." Such a building should revive the memory f the Y. M. C. A. buildings and similar structures in the camps and cantonments. oldiers speak gratefully of the light and cheer that they have received in these huts. hey will carry this memory forever. Why not put this memory into brick and mortar?

This war has speeded human progress in many ways. Why should it not mark ur progress in tomb building? Would not a memorial building in every community, onstantly used by the living, be a more practical and even a more beautifully senti-nental object than a pile of stone or bronze?

Anyway, the erection of statues and shafts and mausoleums belongs to the era of ings. The appropriate monument for a democracy is a warm and useful structure nat shall be an integral part of the people's life.

Mr. Howard Strong, secretary of the Minneapolis Civic Association, says: "The ar is not being fought for martial victory alone. That victory is but the means to an nd. The war will be worth while only as the way we utilize our victory shall serve ne ends of real democracy. I know of no better medium for the working out of a ommon fellowship than the community center which THE AMERICAN CITY suggests."

It is sincerely to be hoped that this idea will receive the enthusiastic support of the owns and cities of the United States. This is, or ought to be, as President Wilson says, the birth of a new day," and the manner in which we show it forth in our architecture hould signify something of its meaning, that hereafter the energies of government, as ell as of science, art, and religion, are to be devoted to giving the struggling mass of nen and women a better chance.

Copyright, 1918, by Frank Crane.

For Immediate Action in Attacking the Problems of Reconstruction

UNDER the heading of "A Motive and a Method for American Reconstruction," the City Edition of THE AMERICAN CITY for November has presented a program of progress towards the increased human happiness which may be assumed to be the goal of reconstruction. It is realized that many of the steps included in that program are beyond the scope of a publication devoted to city, town and county affairs. It is a fact, however, that the action of local governments and civic bodies has a most direct and intimate bearing on the daily lives and welfare of the people. We cannot but feel, therefore, that, aside from the Administration in Washington itself, no force in the country can become so potent for good in the critical days ahead as the local governments and organizations which are represented by the subscribers for this magazine.

Suggestions for Municipal Officials and Local Civic Bodies

Hence we make bold to suggest to our readers the following program of action:

(a) Organize local committees on reconstruction to include representatives of your city or county government and of your local commercial, civic, religious, professional, fraternal, labor and war-service organizations. Men and women who have shown willingness and ability to render unselfish public service during the war would make valuable members of such a committee.

(b) Select from the subjects included in the program those with which local governments and organizations ought to be concerned, and coöperate in studying and solving them.

(c) Don't attempt to do everything at once, but give immediate attention to the special problems which are sure to arise when demobilization begins and war orders cease. Specifically, see that plans are prepared (and if possible, funds voted) for road construction, street paving, public buildings and sanitoria, bridges, parks, playgrounds and other needed municipal and county improvements. Such plans might include the reconstruction of slum areas an "blighted districts" in large cities; ne housing developments; provision of mo adequate protection against fire and floo rehabilitation and extension of public util ties; development of water-supplies an water power, and the freeing of strean and lakes from pollution.

(d) Give special attention while the 191 legislatures are in session to state legisla tion and constitutional amendments whic may be necessary to permit the efficien handling and adequate financing of afte war projects. Give similar prompt con sideration to local needs, such as charte amendments and the revision of municip ordinances.

(e) Urge upon Congress and upon you legislature that the Federal and State Go ernments assume their share of the afte war employment problem by planning fo important public works, such as the reclam ation of swamp lands and cut-over land irrigation of arid lands, reforestation, rai road extensions, water-power developmen etc. Of special importance are well-con sidered plans for the allotment of lands t returned soldiers and the development o new farm settlement communities unde government supervision.

(f) Hold community meetings for th discussion of after-war problems and se cure as speakers specialists on various sub jects included in the foregoing lists. A special "reconstruction week" with dail meetings has been suggested, preceding o following which the local Reconstructio Committee might be organized.

(g) Make plans in every city, town an village for living memorials to those wh have fought in the world war, to b erected when peace has been declared Community houses to be known as "Liberty Buildings" have been suggested by THE AMERICAN CITY as the ideal structures fo this purpose. Such buildings would serv as the gathering places for fellowship an civic service for all the people, and woul be a distinctive contribution from the grea war to democracy and human happines during the coming era of peace.

The People Demand Permanent Roads

Illinois Votes to Spend $60,000,000 for Roads—Pennsylvania Amends the State Constitution to Permit a $50,000,000 Bond Issue for Improved Highways

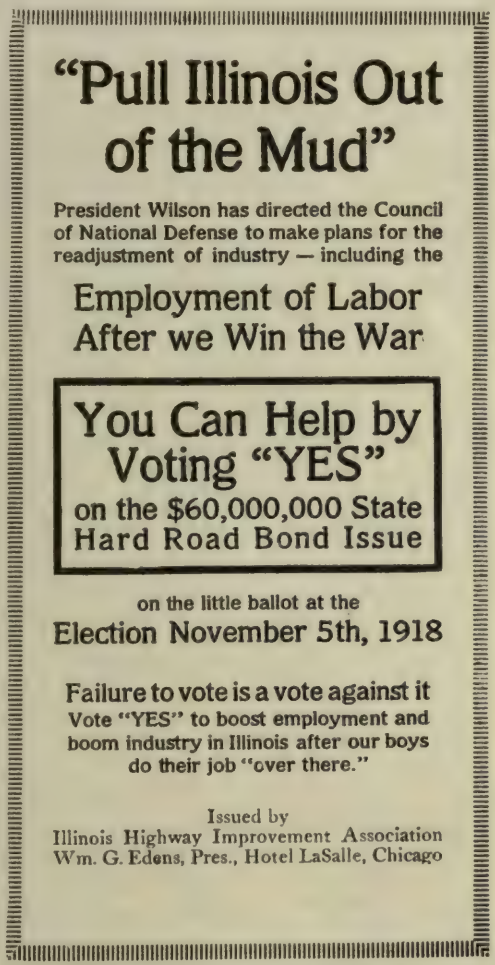
THE voters of Illinois and Pennsylvania have by their action on November 5 shown themselves convinced of ıe need of permanent roads. In Illinois ıe $60,000,000 ɔnd issue for a 800-mile hard-ırfaced road sys-m was carried the polls by a ajority of 500,-ɔo, and a great construction plan us becomes ef-ctive at a most ramatic moment. Pennsylvania e voters ratified a majority of er 100,000 a pro-ɔsed amendment the state consti-tion permitting e state to issue ɔnds to the ex-nt of $50,000,000 r the improve-ent and construc-ɔn of highways. oth states have deed voted to pull emselves "out of e mud."

A remarkable mpaign of edu-tion was carried in Illinois for x months preced-g the election by e Illinois High-ay Improvement ssociation, an or-nization created r the purpose, of which William G. lens is president and Robert W. Dunn, cretary, both of Chicago. The platform the Association was as follows:

1. A state bond issue of $60,000,000 to be ted for at the General Election in November, 18, as authorized by the Fiftieth General ssembly, for the purpose of constructing a state-wide system of permanent hard roads to connect the different communities and principal cities and towns of the state.

2. Funds for the payment of the bonds and the interest thereon to be taken from state automobile license fees now being accumulated by the state of Illinois for this purpose.

3. Authorize issuance of these bonds now and build the roads after the war, when public improvement will give timely employment to labor.



FROM A CIRCULAR USED IN THE ILLINOIS CAMPAIGN

The campaign of information was carried into every schoolhouse district in the state. It was realized that altho the proposition would be recognized as a worthy one, the people would not be likely to vote for such a large expenditure unless the good reasons for it were made very clear. Hundreds of public addresses were made. Two thousand feet of moving-picture film, entitled "Over Unchanged Roads in a World of Change," showing existing conditions and contrasting them with the improvements which the bond issue would make possible, were exhibited last summer in a 3,000-mile trip thruout the state under the direction of engineers. Among the distinguished people who spoke on this matter to all sorts of audiences—in shipyards and steel mills,

in colleges and universities, in village assemblies and farmers' institutes—was Governor Frank O. Lowden, who gave his pledge that no contracts for this work would be let until after the war, in order that farm work should not be interfered with nor the railroads loaded with materials for these roads. "Much work, however," said the Governor, "must be done before an actual start is made, in the way of plans and specifications. If the people ratify the action of the General Assembly, this engineering work will be begun at once. We should then be in a position, at the close of the war, to begin intelligently and economically to do this work. Not only would we in this way secure the best system of hard roads which any state has, but we would also furnish employment for many of our returning soldiers. In my opinion, the only thing necessary to secure a favorable vote is to get the people to understand just what the proposition is. No one, I think, who has a clear idea of what is proposed will oppose it."

One of the most telling means employed in explaining to the people why they should vote for the bond issue was the set of circulars issued by the Illinois Highway Improvement Association. Each one of these presented a different argument, but, on account of a peculiar law in that state, every one also reiterated the warning to the indifferent citizen: "Failure to vote on the proposition is equivalent to voting against it!"



THE $60,000,000 STATE ROAD BOND ISSUE WILL MAKE ILLINOIS LOOK LIKE THIS

How Will the Bonds Be Paid?

The financial aspect was thus presented:

"These bonds will be serial bonds bearing interest at not to exceed 4 per cent. The bonds will be issued as needed and will be entirely paid up within 25 years after first bonds are sold. The total principal and interest amounts to $82,000,000, making an average yearly cost for 25 years of $3,280,000. How will this cost be paid? The entire cost of these bonds, principal and interest, will be paid by automobile license fees which have already been fixed by l*No direct tax.* The law provides that motor vehicle license fees must be used this purpose before any direct tax can levied. In 1917 there were over 340,0 cars registered. At the rate of $10 per (which will be the average under the n rate made effective by law), the number cars in use last year will yield $3,400,0 per year, or more than enough to pay t entire cost. Illinois now has one auton bile for each sixteen persons, while Io has one car for each eight persons. If t cars in Illinois increase to one for ea twelve people, the increased registrati will yield a yearly surplus of $2,600,000

maintenance and for the improvement of connecting roads.

"Until you own a car this great road system will not cost you one cent. If you own a car, the license fees will be due annually, whether the bond issue carries or not, because these fees have already been fixed by law."

Making and Maintaining the Roads

All details of construction and the location of the roads between the points mentioned in the law are to be determined by the State Department of Public Works and



THE U. S. TRANSPORT TRUCK TRAINS WERE ALWAYS GLAD TO FIND A STRETCH OF WELL-BUILT ROAD LIKE THIS

Buildings. Construction will be carried on in all parts of the state simultaneously, and the entire system can be completed within five years after construction begins. The roads are to be durable, paved 10 to 18 feet wide, and graded 24 to 30 feet wide between ditches.

The roads will be maintained entirely by the state, and the cost paid from surplus automobile license fees. The public is guaranteed that this investment in roads will be safeguarded by proper maintenance. If roads which have been paved by counties and accepted by the state are made a part of the state system, the state will refund to the counties the money so expended.

The carrying of this bond issue means the employment of thousands of workers in the production of brick, cement, tar, asphalt, sand, gravel, stone and road machinery. It will mean the use of an army of men on the construction itself; and it will therefore provide profitable work when our soldiers come home. To quote Governor Lowden again:

"The day is coming when the state and the nation will have to take the lead in great public improvements to turn business and labor back into normal channels. That will be the day when our boys are back with laurels from foreign fields. We will have to take the initiative to prevent what economists say comes after every war—a temporary cessation of industry while it is being readjusted from a war basis to a peace basis. In that period we shall find the material market lower; we can get railroad cars to carry the things that go into the making of hard roads. Our engineers, now building great road systems in France, will be available for our employment.

"I am informed by men well acquainted with road-building that, considering every process of machinery and material production, transportation and actual construction, more than half the cost of our proposed road system will go to labor."

What the New Road System Will Mean to the Farmer

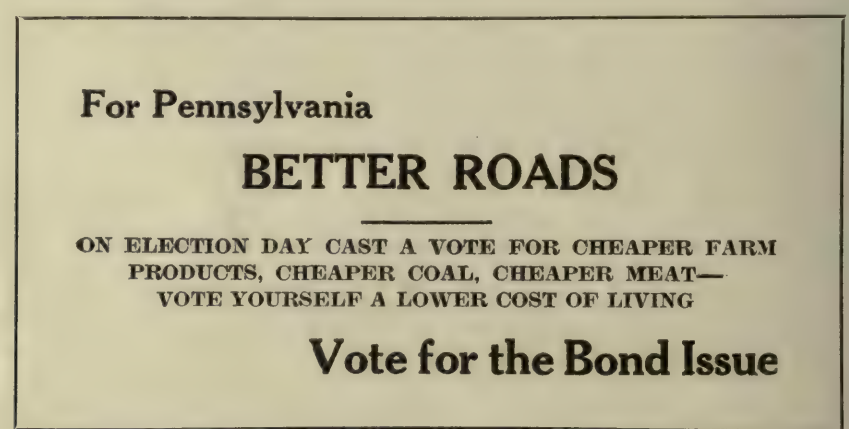
The farmer's point of view of the bond issue has been well presented by State

Senator H. M. Dunlap. Twelve years ago the farmers were opposed to hard roads and were interested in not having such a proposition saddled upon them. Since then the farmer has progressed as well as the rest of the world. No doubt the automobile has done much to bring about this change of sentiment, and the question now is, how can we best get the good roads and what are the best roads for our money?

It is easy to show the farmer who owns a car that hard-surfaced roads will save enough money on gasoline, oil and wear and tear to much more than pay his license fee. The farmer who does not own a car may have been somewhat less easily convinced of the value of this bond issue, for it is he who is getting "something for nothing," since it is a case where the automobile owner pays the bill. But the ordinary farmer will come to see that hard-surfaced roads are to his advantage whether he owns a car or not. He will save perhaps one-half in hauling his crops to the market. His teams will haul heavier loads and will make the trip in a much shorter time with less wear and tear. When the roads are built, the farmers are going to do more hauling with trucks.

The roads will be a benefit to the farmer from an educational and social standpoint also. It will mean consolidated schools with a better corps of teachers and better training for the children in the grades and the high schools. Better roads and automobiles will tend to keep the young people on the farms and to make the life of the older ones more enjoyable. They will help to do away with the line of demarcation between the city and the country. The farmer will take a more active part in the affairs of the neighborhood, which should include the city as well as the country. With dirt roads it is impossible to make an appointment in the city in advance without taking the weather into consideration.

It would have taken a long time to get a complete system of state roads under the old piecemeal plan, but by this new system all the principal cities and nearly all the county seats will be connected. The roads will serve 85 per cent of the people living within five miles of these roadways. If the farmer wants to go 50, 100, 200 or more miles away from home, all he has to do is to drive to the nearest hard road, not more than five miles away, and on that improved road he can go to any place in the state. Progressive communities will build local roads connecting with the state roads, and the farmer will become a thoroly independent person.



A STRONG PLEA FOR HIGHWAY IMPROVEMENT IN PENNSYLVANIA

The Pennsylvania Good Roads Campaign

In Pennsylvania the campaign to secure favorable action on the $50,000,000 bond issue was waged by the Associated Highways Organization of Pennsylvania, an association formed in Harrisburg last spring. The officers of this association are, president, John S. Fisher, a former state senator, of Indiana, Pa.; vice-president, Dr. P. T. Johnson, of Erie, a prominent official of the Perry Highway Association; treasurer,

William Jennings, and secretary, M. H. James, both of Harrisburg, and president and secretary respectively of the William Penn Highway Association.

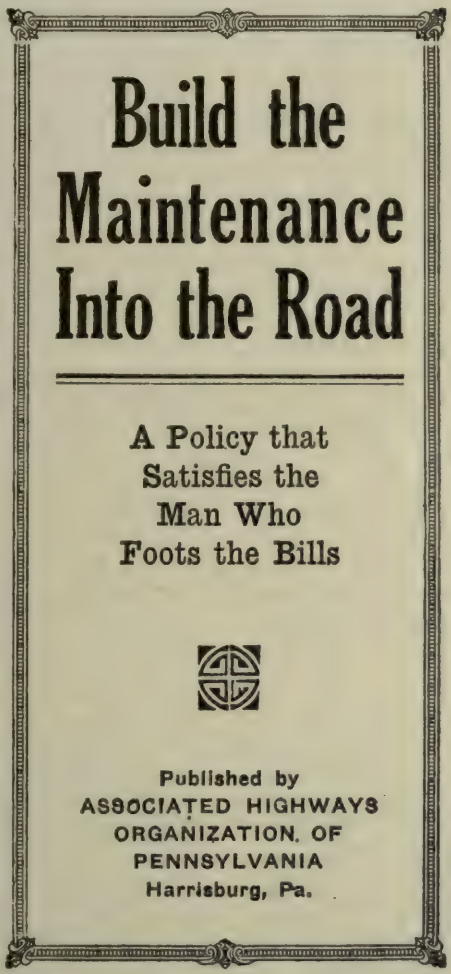
The majority of good roads organizations in the state were associated in the campaign, and the efforts of 14,000 individuals were enlisted in the effort to get better roads for the state. In addition, the individual memberships of the numerous road-boosting associations were put to work, and these gave an additional 15,000 active advocates of better highways. The publicity campaign was directed from Harrisburg and reached every part of the state thru the hearty coöperation of the newspapers. Motor clubs, chambers of commerce, boards of trade, department stores and motor truck manufacturers paid for advertising space in the newspapers, and "boiler plate" was used by hundreds of weekly newspapers.

The newly elected governor, William C. Sproul, has sponsored the plans for a new road system in Pennsylvania. Addressing the people of Pennsylvania, he said:

"The past year has shown, as never before, the need of good highways. The assessed wealth of Pennsylvania is now close to ten billion dollars—the real worth is much more. Surely a commonwealth so rich, so enterprising and so self-contained and self-sustaining should have highways as good as any to be found in the world.

"When the state can afford it, all of the main highways should be taken over and the townships and small boros relieved of their care, so that local taxes may go to provide better side roads, better schools and better living conditions for the people on the farms. The roads must go to the people, that all may have the advantages of them, and not only the favored ones on the main routes.

"With the increasing automobile revenue, the federal assistance, the coöperation of the counties and the money available from the state appropriations, a real showing can be made now on a real road program. Road contracts and the locations of improvements must be made according to a definite plan that will be just to every county in the state."



PUBLICITY FOR PERMANENT ROADS IN PENNSYLVANIA

Highway Officials Postpone Chicago Meeting

On account of an important meeting of the War Service Committees of the United States Chamber of Commerce, it has been deemed advisable to postpone the meeting of the American Association of State Highway Officials and the Highway Industries Association in Chicago to the week of December 9 to 13, the date of the joint meeting to be December 11 and 12.

The Vital Importance of the Highway

A Plea for the Establishment of a Federal Highway Commission

By S. M. Williams
President, Highway Industries Association

WILL the United States awaken to her necessities in highway development or shall we as her people continue to allow the importance of our highways to be ignored by those responsible for their development, and continue to pay the penalty for that neglect?

The total road mileage of the United States in 1909 was 2,199,645. On January 1, 1915, it was 2,445,760, showing an increase for the five years of 246,115 miles, or approximately 50,000 per year. Taking the increase as an average, the total mileage by January 1, 1919, would be 2,645,760; but it is estimated to be nearer 2,750,000 miles. Of the total mileage in 1909, there had been improved 190,476 miles, and on January 1, 1915, 257,291 miles, an increase for the five years of only 66,815 miles, or 13,363 miles per year. This proves that we were opening up in new roads each year more than three times the mileage that we were improving so they would stand even a reasonable traffic, and we were making no provision for the improvement of approximately 2,500,000 miles previously opened and to be improved.

Upon the basis of new construction from 1909 to 1915, our present road mileage, with no increase, would require 166⅔ years for improvement. Admitting that there are many miles in the total number that are not of sufficient economic importance to warrant considerable expense for their improvement, no one will question that at least 20 per cent of the total mileage should be improved. At the above rate of improvement per annum, it would require 33 years to complete the 20 per cent without providing for the improvement of the inevitable increase in mileage daily coming into importance, the improvement of which means so much for the material welfare of our people.

Official Washington has for many years closed both eyes and ears to the importance of the public highway, and to-day problems of highway development are handled by a mere bureau of a department whose chief activities lie in other directions. The neg-



SUCH HIGHWAY CONDITIONS AS THIS ARE A MENACE TO OUR NATIONAL WELFARE

ect in allowing our highways to take their roper place in our general system of trans-ortation is to-day penalizing the country nany times the cost of highway improve-nent.

The economic values of improved high-vays are not fully recognized by the Fed-ral Government in its plans for winning he war. We have been pleading with the armer for greater production and efficiency n the farm, and the farmer is responding hru improved methods and equipment, but vhat are we doing to aid the farmer in narketing his product? Last year, and gain this year, we shall lose millions and nillions in food products and farm labor ecause of inability to market the products vhen they should be marketed. We are rying food conservation, and the public is esponding nobly, but our waste thru our ndifference to the country's needs in im-roved highways is many times greater than ur saving. Mr. Hoover, Federal Food Commissioner, states that 50 per cent of our erishables grown are wasted thru inability o market, due to bad roads. He has also varned the people of the United States hat the food shortage, now that the war is ver, will be more acute than during the var. Notwithstanding these facts, there re some people who have consistently op-osed highway improvement, and in many ases have objected to the maintenance of ighways already constructed because they vere not essential to the nation's welfare. There are others who contend that im-roved highways are only of local impor-ance.

Our Dependence Upon the Highways

During the last year there was some wakening as to the true economic value of he highway as a unit of transportation. This did not come until our single sys-em of transportation—the railroads—had roken down under the terrific demands of ndustry for transportation. This increased lemand was the logical outcome of the rowth of industry, and by that I mean all ndustry, from the farm to the factory. True, our becoming involved in war, and he demands from the Allies for food and nunitions, had increased the burden of ransportation, but, regardless of war, we vere rapidly drifting towards the same con-ested conditions in transportation that have existed for the last year or so. These conditions should not be charged to in-efficiency of transportation, but should be charged directly to lack of forethought in the improvement of transportation in all its forms. With the failure of the railroads to meet the traffic demands, industry was compelled to turn to the highways for re-lief. This relief was sufficient to show definitely the value of the highways, but insignificant in its remedy on account of the deplorable lack of durable highways upon which highway transportation must depend.

During the last year we appropriated more than one billion dollars for railroad improvement. No one doubts the wisdom of that appropriation, but in spite of our having a greater ton mileage over the high-ways of the United States than over the railroads, some people contended that our highways had served us for one hundred years and therefore should not be improved during the war, and this opinion prevented the expenditure of money for important and necessary highway improvement. A con-gressional investigation in 1914 showed that the people of the United States were paying a penalty of about $504,000,000 an-nually in excessive cost for rural hauling, due to bad roads. With a growth of pro-duction many times greater than the im-provement of our highways, this penalty has greatly increased.

Is it not time for our Federal Govern-ment to take over the construction, main-tenance and control of our main interstate highways without obligation upon the part of the state and county, and require the states and counties to build the less impor-tant roads? Is it not time for us to cease considering the public highways of our country a side issue of any one department of the Government, and give them the same character of recognition that we give our railroads? Is it not time that we should have a Federal Highway Commission ap-pointed by and directly responsible to the President of the United States, its member-ship consisting of men specially qualified for the work involved, able and willing to coöperate with all departments of the Gov-ernment in meeting their individual re-quirements, clothed with proper authority and given sufficient appropriation to meet the highway problems of the country with a definite, sane and aggressive policy?

Putting the Right Road in the Right Place*

By Rodman Wiley
Commissioner of Public Roads, Kentucky

The Location of the Road

EVERYONE has seen on numerous occasions the mistakes that have been made by viewers in locating roads. It must be remembered that wherever a road is built, schoolhouses, residences, churches and business houses will follow the development. In case the location is bad. it is most difficult and oftentimes impossible to provide any remedy, because if the location is changed, all the improvements are lost; consequently, the taxpayers are compelled from year to year to pay a heavy cost for maintaining an improperly located road.

On the other hand, very few have seen a road located by good engineers that ever needed to be changed. France, Belgium, England and Italy realized centuries ago that whenever any road improvement was started it should be in charge of the most competent engineers in the nation; consequently, the roads in those countries have been located with such foresight, such knowledge of the development of the country, that it is almost impossible even at this time with all our advanced ideas and new methods of travel to make any desirable changes. Right in our own state of Kentucky when we speak of the old L. & N. pike there is foremost in every man's mind the thought that the road is located properly, and any suggested changes are viewed with suspicion. It has stood the test of public criticism as well as the elements of destruction. and the expense for maintenance has at all times been a minimum.

The great trouble has been principally the fault of the taxpayers. They have not called for a businesslike administration of the road affairs of their counties, and consequently they have not received it. A road is simply one of the systems of transportation, and its location requires as much if not more skill on the part of an engineer as the location of a railroad. A railroad company usually has ruling grades and ruling degrees of curvature, and no departure is allowed from those standards, whereas when locating a road an engineer must have a vision. In his mind's eye he must see the country as it will grow and as it will be years after the road is built. Consideration must be given to the finances of the county, which is usually not the case in railroad work. A railroad company might expend thousands of dollars to reduce a grade one-half per cent, to reduce the degree of a curve one or two points, but in road work an engineer adopts such grades as will insure the economical construction of the highway, provided, of course, that traffic will not be impeded. Highway location calls for rare judgment on the part of an engineer.

Grading and Surfacing

The grading of a road requires the same amount of skill and experience on the part of the man doing the work as does the grading of any railroad or interurban line. The same kind of machinery, the same instruments, are used for both classes of work. A railroad company never considers for one moment starting any construction work without having experienced engineers on the ground at all times to see that it is properly done. A contractor doing the work knows from bitter experience that he cannot hope to make money unless he has an experienced man in charge, and I cannot understand how men entrusted to build roads can figure that they can depart from the usual custom or that they can break all precedents and do something that railroad companies and contractors have found to be impossible from an economical standpoint and impracticable from all other angles.

When it comes to surfacing any road, the man in charge should have a thoro knowledge of the behavior of all local materials under different kinds of traffic and different climatic conditions, and should also understand the method of doing the work. Experience has shown that attention to minute details is necessary if any type of road is

* From a paper on "The Engineer in Road Work," delivered before the Kentucky Highway Engineer's Association, at Owensboro, Ky., November 12, 1918.



THIS ROAD WAS LOCATED BY "VIEWERS"

roperly built. We know that one man can ake a certain amount of stone and build a ood road, and another man will take the ame class of stone and the same amount of tone and build an inferior road. That hows for itself that there is something in man's knowing how.

However, the most important thing about the surfacing of any road is knowing the type to select. A great many men have had sufficient experience to know how to build a gravel road, a macadam road, or almost any type of road that might be selected, but the real engineering comes in deciding upon



THIS ROAD WAS LOCATED BY ENGINEERS AND BUILT WITH CONVICT LABOR

the proper type to build in certain localities. To intelligently make a decision, consideration must be given to the finances of the district, availability of materials, local materials, the kind and volume of traffic passing over the road, possible increase in traffic due to the improvement, and the approximate cost of maintaining any type that is decided upon. Hundreds of millions of dollars have been wasted in this country by building the wrong type of road. To my mind, the selection of the proper type of road requires the highest type of engineering ability, and before building any road it would be good common sense to get the advice of the foremost engineers in the country as to the most economical type.

Drainage Structures

On many roads we find that it is impossible to transport heavy road machinery, because the drainage structures will not carry the loads. Sometimes we see fairly good roads on which have been installed drainage structures totally unsuited to the traffic. We also find that structures of the wrong size have been built; it is not uncommon to see a 100-foot span trestle where perhaps a 4-by-4 culvert would suffice. Oftentimes we see a culvert pipe installed which is totally incapable of carrying the water, and even the determination of the proper size of any drainage structure is a high-class engineering problem. Everyone should know by this time that the design of culverts and bridges is a branch of engineering that requires years of training and experience.

No railroad company would consider for a moment letting one of its section foremen build a bridge or a culvert according to his own ideas; on the contrary, every structure is carefully designed and is carefully checked before it is allowed to be installed. The great trouble with highway work has been that almost everyone thinks he understands how to design and build drainage structures, and to-day our highways are adorned with structures which have little to commend them except th enormous prices paid by an unknowin public.

Road Maintenance

After a road is built it must be mai tained, and everyone who has had any e perience in road maintenance knows should not be attempted by any but e perienced men, because it is one of t easiest ways to waste money. Just what do to a road in certain stages of deterior tion is one of the most difficult things f even the most experienced engineers to d termine. I have seen some men use fi hundred cubic yards of stone to the mi and make less showing and do less goo than an experienced man would with hundred yards of the same material.

Cost Records

It has always seemed to me peculiar th separate accounts have not been kept shov ing the expenditures which have been mad on a road; to-day it would be impossib to go to any county in this state and find t cost of a single mile of road unless th mile has been built under state supervisio where cost records are accurately kept. is part of the training of an engineer analyze costs and to segregate costs so th he knows not only the original cost of ar improvement but also what it has cost fro year to year; only by keeping and knowin such records can we ever be certain th we are doing economical work.

Every phase of road building is an e gineering problem, and the sooner that fa is realized the sooner will the taxpayers properly protected. But the thing I a contending for will not come over nigh Men without knowledge of the subject wi be elected to office on some fake issue an will continue to build roads according their own pet theories, many of which wi be at variance with good engineering, b the taxpayers should remember that the are paying for all mistakes made.

Preparing for Road-Building



A LOCATION SELECTED FOR THE PREPARATION OF A ROAD

It is generally wise to cut down the trees and blast out the stumps. Small stumps are most economically blown out by a single charge of dynamite placed well down under the center of the stump and fired by means of cap and fuse.



THE SAME SECTION AFTER A PORTION OF THE HILL HAS BEEN NICKED OUT BY EXPLOSIVES

The broken rock is used as a fencing for the outer edge of the road; such a road is well protected and well drained.

Village and Railroad Coöperate in Paving

By A. Swartz
Vice-President, Toledo and Western Railroad Company

DURING the spring of 1915 the Village Council of Metamora passed legislation for the improvement of a number of streets by paving with concrete. East and West Main Street were included in this legislation, over which the Toledo and Western operates its main line, and the railway was called on to pay for that part of the pavement between the rails and for a distance of 18 inches outside. After decision by the Council had been reached to adopt the concrete for the village portion, a selection of a type for the railroad company's portion was considered, resulting in an agreement to use concrete thruout.

A 9-inch slab of concrete was first constructed, parallel to and 14 inches below the finished grade of the street and of sufficient width to allow for placing the ties. Four-inch monolithic headers were constructed along each side of this slab and carried up to within 7 inches of the finished grade, allowing for placing the village portion of the pavement. After this had thoroly set, about 2 inches of ¾- to ¼-inch stone ballast was spread over the slab, and the steel and ties were assembled. Wood ties 6 x 8 inches x 8 feet were spaced 2 feet center to center, and 6-inch, 100-pound rails were used.

After having been assembled, the track construction was tamped up to finished grade, and additional ballast was added until a point was reached parallel to the top of the ties, and upon the completion of this the concrete pavement was placed.

The village portion of this work was constructed first, and a longitudinal joint was made parallel to and 18 inches outside of the rails. This joint was painted with asphalt before the construction of the railroad portion of the paving, and the present success of this improvement, I believe, is due to this permanent line of demarcation between the village and railway portions. A half-inch crown was made between the rails, and the concrete was struck off with a template which was constructed of the proper cross-section to make a groove along the inside of the rails for the flange of the car wheels. Wire mesh reinforcing was used thruout.



CONCRETE BETWEEN CAR TRACKS ON EAST MAIN STREET, METAMORA, OHIO

Transverse expansion joints 30 feet apart and composed of two soft steel plates, one on either side of the ¼-inch felt, were used in the track portion as well as in the village portion of pavement.

This pavement is now nearing the close of its third year of service, having successfully withstood the temperature changes of three winters, and gives every indication of permanency.



MOTOR DUMP TRUCK WITH SNOW PLOW CLEARING A PENNSYLVANIA HIGHWAY

Will the Snow Make Your Roads Impassable?

HIGHWAY preparedness for winter is almost a negligible quantity in many states whose roads of military and economic importance will demand their utilization during the snow-bound period. A survey of the plans for snow removal of every state in the union having sufficient snowfall to impede highway traffic during the winter months has recently been completed by the B. F. Goodrich Rubber Company. The reports from the various state highway commissions disclose a surprising lack of organization and legislation to cope with a situation that promises to be worse this winter than the freight congestion and embargo period of last winter.

Never before have American highways played such an important part in transportation. Fleet after fleet of powerful motor trucks are plying between towns and cities. They release thousands and thousands of freight cars for duty elsewhere. To take the trucks off the highways this winter would be nothing short of a calamity.

America's second winter in the world struggle, with the period of readjustment now beginning, and over two million men in France who must have food and supplies from the rural districts and the inland commercial centers—will heap duties on commerce never before heard of—duties of haulage that our railroads cannot hope to meet.

Highways and trucks must come to the rescue. But under existing laws, state highway commissions have no funds to keep the main-traveled highways opened and cleared of snow. They simply urge county and township road trustees to keep the important roads open. There is no centralized power. Under the present system, a patriotic and energetic county road official may plow and drag the snow from his roads as far as the adjoining county line and find the neighboring county uninterested and inactive. The same condition exists in the relation of states to each other.

The lack of farsightedness and provision for snow clearance is alarming, and before winter arrives and conditions actually become disastrous to the moving of munitions, foodstuffs, fuel and materials, it is suggested that state and county highway commissioners and state legislatures get togethed before winter arrives. The planning should start immediately.

Four States Prepared For Emergencies

The states of New York, Pennsylvania, Michigan and Connecticut saw the importance of winter highway traffic last year and passed special legislation to take care of the war-time emergency. These states are foremost this year in planning for the coming winter. New York has appropriated $1,000,000 for emergency highway work such as highway and bridge repair and maintenance, and the appropriation provides for snow removal on all roads of military importance.

Long trains of army trucks, many of which carried munitions, delivered themselves to the seaboard thru the alert and efficient coöperation of the Pennsylvania State Highway Commission, which cleared the mountain roads of snow last winter. Pennsylvania is attacking the snow removal problem again this year with determination to make her highways very efficient. Much credit is due the state of Connecticut, which spent $41,000 in removing snow and keeping the main highways opened last winter. The state owns 70 trucks which are used for highway work. The Connecticut law reads:

"The highway commissioner shall cause the removal of snow from any completed portion of any trunk line highway when the accumulation thereof shall render such highway unsafe or impassable for public travel."

Other States Laying Plans to Keep Roads Open

Last winter the important roads of Michigan were kept open out of a war-fund appropriation. It is reported that Michigan is taking steps for the removal of snow again this winter. Massachusetts will clear her trunk roads for truck traffic this season. While Indiana has no state fund for snow clearance, she has the pledge of each county road superintendent that the roads will be kept open.

The states of Ohio, Illinois, Wisconsin and Nebraska, with networks of highways of tremendous economic value, over which inter-city and rural motor trucking has attained immense proportions, have not made adequate provisions for keeping their roads open this winter. Rhode Island, Missouri, Iowa and New Jersey have no state funds for this work, but are busily engaged urging local authorities to make preparations.

Great credit is due to Saguache and Chaffee counties in Colorado, which have joined hands to keep open, the year round, the highway passes over the mountain range. Grading crews will be constantly at work during the winter months, clearing the heavy mountain snow drifts.

Kansas has adopted a commendable plan that should have the consideration of every state and county highway official in the United States. Money for snow clearance in Kansas is taken from the road-drag fund. The opinion is advanced that melting snow is a growing cancer to a dirt road. Kansas says road dragging after heavy as well as light snow is the savior of dirt roads and the proper place to charge the work is to the road-dragging fund.



THE GREAT IMPORTANCE OF RURAL MOTOR TRUCKING MAKES IT IMPERATIVE THAT HIGHWAYS SHOULD BE KEPT OPEN THRUOUT THE WHOLE YEAR

A Bit of Experience in Highway Construction

By Freeman D. Martin

THERE is probably no form of construction which has covered so many years of experimental work and still remains a matter of greater discussion than does the building of public highways. We have reached the period where we must build five types of roadway, namely:

1. The dirt road which has light wagon traffic from the farms to the main road
2. The county roads which will carry ordinary traffic and some heavy trucks
3. The state highways provided for high-speed auto travel and considerable truck service
4. The freight highway which must sooner or later connect the larger manufacturing centers, where heavy-duty trucks operate by the hundreds daily
5. The city street to be constructed for excessive service

Type No. 3, the state highway, will have thousands of miles in service when our states have completed their road systems.

Having recently finished eight miles of water-bound macadam road, I wish to make public some of our experiences, our opinion of the finished road, and some suggestions, which, if carried out, will without question save considerable money on work yet to be constructed.

The Humboldt Road of Bourbon County, Kansas, which is a portion of the Fort Scott-Wichita Road, is 14 feet wide and 8 inches in thickness.

The bottom course is of rough rock, broken to an average 4-inch size. The second course is crushed stone which passes a 2½-inch ring. The finished surface was made with the chat and dust furnished by the crushing. Each course was thoroly rolled with a 10-ton roller. After placing the chat, the road was well soaked with water from tanks placed on trucks, and rolled. Later the rock dust was added, soaked with water and rolled.

For ordinary vehicles and wagons this road will give a good surface for about four years; however, with automobiles by the hundred passing over it daily, it will remain in good condition only about twelve to eighteen months. The repairs then necessary will be approximately $3,000 per mile, providing a quarry is located on the road and the county owns its complete equipment for crushing, hauling and rolling.

This type of road will cost about $7,500 per mile under the present conditions, but no one should advocate water-bound macadam for a main highway, as the auto traffic wears the road into a limestone dust and slowly but surely blows it into the adjacent fields. An asphaltum or Tarvia binder must be used. On this particular road it would have added $3,000 per mile to the cost and about five years to the life of the road.

Thruout the great Central West, where



APPLYING CRUSHED ROCK ON A ROAD IN BOURBON COUNTY, KANSAS

we must limit our taxation, impregnated macadam roads should be our limit of expense, therefore we must advocate some safeguards to this type of construction.

During our construction period we used 7-ton trucks to haul our material, and it can be stated frankly that they are too heavy to be economical for any contractor. The experience of such states as New York, Massachusetts, Delaware, Connecticut, Maryland and New Jersey on their state highways and the experience of Chicago on Washington Boulevard, makes it necessary for us to consider as part of our future plans the weight to be allowed per square inch of tire surface on trucks.

The type of road suggested for our section will adequately carry 3- and 4-ton loads. As a further help to the traffic problem, these trucks can pull trailers loaded to the same capacity without injuring our roads. The 5- and 7-ton trucks, the latter weighing approximately 30,000 pounds loaded, will eventually, if used in numbers, cause enormous repair bills and prohibitive losses.

Now that we have completed our task overseas, we should enter upon a nation-wide road-building movement that will give us highways at least equal to, if not better than, those which our soldiers have seen in Europe.

The "Movies" as a Rural Community Organizer in North Carolina

By Colonel Fred. A. Olds
Secretary, North Carolina State Historical Commission

NORTH CAROLINA has devised a successful method of reaching communities, no matter how remote they may be from any center. It has established and is operating the State and County Motion Picture Service, and its "movies," which are the greatest and best of all story-tellers, take wonderful messages to the rural folk.

The State Superintendent of Public Instruction is Dr. James Yadkin Joyner, and upon his recommendation the Legislature early in 1917 appropriated $25,000 as the state's one-third of the expense of this particular line of work, which had been tried out in a small but practical way. No time was lost in taking advantage of the opportunity, and Salemburg, in Sampson County, which in 1913 had established, under the direction of the United States and the state of North Carolina, the first "model community" in this country, covering an area of 25 square miles, made the first application for aid from this fund.

The Legislature, in the 1917 Act referred to, provided for entertainments, varying in number and plan, based upon what are known as units; each unit consists of a complete moving-picture outfit carried in a specially constructed Ford car, a part of the equipment being a dynamo, operated by a Delco outfit. An operator goes with each car, and there is, of course, a director. All the films are bought direct, as the leasing system had been tried and abandoned early.

Under the plan, a county which desires the service for a whole year pays about $2,000, or half that sum for six months; a grouping of counties can be arranged, these groupings reducing the cost. All contracts and agreements are made by the State Department of Public Instruction, in compliance with the Act of the Legislature, which is designed "to improve the social and educational conditions of rural communities" by a series of entertainments consisting of moving pictures, chosen for their educational and entertaining value.

In any given county there are ten community centers, which are selected so as to cover the various sections. Each of these centers bears its proper part of the cost, paying this part to the County Board of Education. It is delightful to see the zest with which the people have taken hold of the plan ever since the service was put on early last year.

In every community which agrees to be



MOVING-PICTURE EQUIPMENT FOR NORTH CAROLINA RURAL COMMUNITY WORK, TRANSPORTED BY AUTOMOBILE

formed, the pictures are put on twice a month at each center. Each program consists of six reels, and after the picture show ends, a community meeting is always held. The vast advantage in having these community meetings is evident, for people who have heretofore stayed at home turn out to see the pictures. Every agency by which the United States, the state and the county desire to present subjects to the people has the greatest sort of opportunity. The County Superintendent of Education, the Home Demonstration Agent, the County Health Officer, or any other constructive force, has the same opportunity of presenting matters to an audience ready-to-hand.

The motion-picture director is an essential element of this great movement, and upon him it really depends. At the community meetings he speaks freely and gives valuable information, but none of it of a technical nature, for his instructions are in technical matters always to refer his hearers to authoritative sources of technical information. Right here is the great secret of the success of this movement, for the director is simply an expert organizer who musters all the human forces of a community and gets out of these an effective machine, a united constructive force for the nation, the state and the county, as well as the local zone.

The director goes further, for he organizes what may be termed the human side of community fairs, which have become so important in this state that 256 were planned for 1918 in the hundred counties. He goes further still, for it is part of his business to look after picnics, debating meetings, and various other social features, and he gives to plays and games his particular attention.

Take the case of Sampson County. As soon as this fund was made available, ten communities, well grouped, guaranteed the County Board of Education $225 each, to pay for the service. Each community was allowed to raise this money as it thought best. In every case a uniform charge of ten cents for each entertainment was made, and there was immediate financial success, for money enough was often taken in at one meeting to pay the cost for that community.

Some counties have secured the service for the year round. Only a few years ago it was the favored few who lived in cities and towns who saw good moving pictures, but now anywhere a Ford can travel the movies are taken to the people.

The reader will begin to see what a promoter this motion picture service is, coming along with the automobile, good roads, rural free delivery and better farming, for it preaches a gospel which strikes right in. The great idea is wholesome and regular recreation for a community, furnished thru pictures of a high type, shown by real men. Out of these exhibits and their proper direction, and the community meetings which are tied in, a fine community spirit has developed, and the isolation which has been a curse in so many rural districts has been removed.

W. C. Crosby, of the State Department of Public Instruction, who has charge of

this work in North Carolina, recently said to the writer:

"We have in mind now another great thing, —the correction of the immense amount of physical unfitness which the war draft has revealed in country boys of military age. So in every community where we are working, a special day, named "Physical Fitness Day," will be observed before the year ends, under the direction of our men. On that day the standard tests for physical efficiency will be applied to the boys and girls of the community, and the results of the tests will go into a permanent record, in the county archives and in our office.

"Those who fail to pass the tests will be reported to their parents and teachers, and the best method suggested for overcoming the deficiencies. Those who pass the tests will be given certificates of efficiency, signed by the supervisor of recreation and a state official. Thus we are going to stimulate our country boys and girls to care for and develop their bodies as a really patriotic service.

"We have had no guidance in this work from any other state; we are absolute pioneers. It is our great desire that what we are doing shall not be known simply as moving-picture work, tho really that of itself would justify both cost and effort. The pictures are simply something concrete around which we gather all the features of a larger community work and service. Our field outfit is so complete that I can go into the Sahara Desert with a gallon of gasoline and give a show. We have all our films made by the Atlas Educational Film Company, of Chicago. Manitoba and some western states are planning to take up the plan."

The pictures can be shown in the handsome brick schoolhouse or the simple wooden one, and the equipment has long extension cords, which can be led thru a door or a window into any building; or the pictures can be put on outdoors. The Superintendent of Education of Hoke County says thousands of people there see the pictures, "their only chance," and the clean films exert a tremendous influence on the rural folk. "The service," he says, "has linked up our county on public questions and has done more than any other thing to arouse our people to their duty to win the war."

A Warning from the Kansas State Board of Health



PHILLIPS UNIVERSITY LIBRARY

Rural Relations of High Schools*

By C. J. Galpin and J. A. James

THE rising value of head-work on American farms opens up a new market for the wares of the high school. The hand farmer is being gradually replaced by the machine farmer; and the great muscles of the land worker are slowly getting smaller while the higher brain centers of the farm engineer are coming into use. High schools that first perceive this change in country life and adapt their methods to the new country communities will first enter into the benefits of this opening intellectual market.

The fear of the hoe farmer has been that if he educate his boy he will run the risk of losing the boy from the farm to the city. The fear of the machine farmer may very well be that if he fail to educate his boy he runs the risk that the boy will not comprehend the modern science and art of agriculture. This rural dilemma in which the farmers of a community are living and struggling is one of the real problems of our time. The statesmanlike high school situated at the very heart of the larger community is probably the most potent factor in resolving this dilemma of the farmer so as both to educate the farm boy and to send him back to the farm a permanent rural citizen.

We have to-day more than 12,000 high schools, with an attendance of nearly 1,500,000 boys and girls. The report of the United States Commissioner of Education for 1916 shows that 990 of these high schools are located in cities of 8,000 or more. The remaining 10,684 high schools average fewer than four teachers and an attendance less than 62 pupils. Why should the ideals of the city dominate the teaching of the high school when the small high school is the school of the masses? Nearly every community supporting the schools is dependent upon rural activities and should give the training needed by the large majority of its pupils who will remain in the community. The schools should reflect the daily life of the people.

Agriculture in the High School

A majority of the high schools of Wisconsin have given to the study of agriculture one semester or a year. One hundred high schools have two or more years of agriculture, with the intent of offering what is known as a four-year agricultural course. The following is suggestive of a program of studies found in many Wisconsin rural high schools:

First Year	Second Year
English	English
Algebra	Arithmetic
General Science	Ancient History
Botany—Farm Crops	Farm Crops—Soils
Third Year	**Fourth Year**
English	English
Medieval and Modern History	United States History
Geometry	Physics
Animal Husbandry	Farm Mechanics—Farm Management

The agricultural subjects give the boy a view of the varying activities of the farm. Beginning with botany and general science, he lays a foundation in general principles and follows with a study of the plant life of the farm. He studies the common field crops, fruits and vegetables, and does home work in the production of some crop of local importance. This home work of the second year is a continuation of the work in harvesting, seed selection and judging of crops, together with a study of the problems of the soil. Animal husbandry considers the problems of dairy, poultry and meat production and the feeding, breeding, management and care of all types of animals. The course is rounded out with farm mechanics and farm management supplemented by production projects during the summer, and herd testing, feeding, care and management of poultry, pigs and calves during the school year.

The teacher of agriculture should be a man who is in sympathy with the rural life movement. He should be from the open country and should have the familiarity with farm life and agricultural practices that comes with boyhood and young manhood experiences on the farm. He must have had a thoro course in agriculture and

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the fundamental sciences. Most of the states require that the teacher of agriculture in the high school have four years of preparation beyond a high school and be a graduate of an agricultural college. A por-

Some agricultural departments of h schools have found it possible to arra special laboratory instruction with fa animals owned by the school, the boys the instructor, and have cared for anim



A STUDY OF CORN

This laboratory at Marshall, Wis., shows the interest of the boys in corn study. The definiteness of the study and its application to their home life is the reason

tion of this preparation should consist in a study of educational problems and special methods of instruction, with an opportunity for applying the methods of instruction. Besides his training, he must have tact, for he goes to the homes of his pupils to supervise their work. A mature man has many advantages over a young man, especially in activities outside the school building.

The agricultural teacher has an opportunity to arrange his work in a seasonal way. He plans the study of seed selection for the fall months when corn is ripe, and takes the class to some patron's corn field to select corn under natural conditions. Seed potatoes are studied in the same way. Pruning and spraying are studied in the spring, and again the laboratory instruction is in the orchard of some taxpayer of the district. In the spring, when the seed question is uppermost in the mind of the farmer, the laboratory practice may be in germination tests or in the treatment with formaldehyde of grain or potatoes. The use of the hotbed and cold-frame are new practices in many places, and the demonstration of their uses in the early spring again brings the school into contact with the farm at a time when it may influence the agricultural practice of the school district.

on or near the school grounds. These p jects have given opportunities for pract and have increased the interest in the struction. They require, however, care planning by the instructor and should phasize some important agricultural tivity of the district as a special study.

Home Work in Agriculture

Boys who live on farms secure agric tural experience in home work, and a pr lem demonstrating what scientific meth will accomplish may be given as a ho project. It may consist of raising an a of corn, potatoes, beans or cabbage, or the care of the home orchard, the poult a pure-bred calf or a litter of pigs. Reco of all labor and costs are kept for a sch report. The agricultural instructor cusses the project with the boy and vi the project on the home farm, carrying school into the country and winning the operation and interest of the parents. T project is a bond uniting teacher, pare pupil and school.

The Waupaca high school interested boys in a potato project. Early in spring the details for the production o crop of potatoes were studied, and the b made their plans. A local bank offe

prizes, which added interest and made it possible to secure boys in the rural schools to produce an acre under the supervision of the agriculture department of the high school. Each boy conducted his project thru the summer, and in late October submitted his report with a half-bushel sample of his crop for the local high school fair. Altho the average for the county was about 60 bushels, the highest yield was 357 bushels an acre and the average was 212 bushels. The potatoes shown were evidence that the boys knew the right type in potatoes and had received instruction valuable for the future.

The development of home work makes it imperative that the agricultural instructor be hired for the entire year. Home projects without supervision are inadequate and have often resulted in very unsatisfactory conditions. Supervision thru the summer with a complete record for the season and the connecting of the work with the agricultural department of the local high school places it on a sound basis.

Boys' and Girls' Agricultural Clubs

The organization into a club of the boys and girls who are doing home projects is an advantage. Just as the literary society supplements the instruction in English, the agricultural club helps in the development of practical agriculture. Boys and girls of the club may meet once a month or oftener during the year for social meetings or for the discussion of projects. The type of productive work in home projects or boys' and girls' clubs is the same, but the latter system of organization may include persons who are not in school. Connection with the school system is a help to the club work, and the club organization with its meetings serves to hold together the home project workers during the interval of summer vacation, so each helps the other.

The club organization appeals to the boy or girl because he becomes a member of a body of workers with a definite purpose. The club meetings give him an opportunity for experience in self-expression and parliamentary practice; the school project becomes the pride of the club member because it may bring honor to his club group. The opportunities to visit the state round-up and to show at the state fair or at special agricultural meetings, such as the local or state potato show, give him enthusiasm for and ideals of quality. But more important is the connecting of his educational activities with the practical experience of the adults of the community and the state.

High School Extension

Agricultural extension with adults will come as a recognition of the agricultural instructor's ability and leadership, but when the demands of adult extension interfere with the instructional and club demands of the school they should be referred to the county agent. Experience has shown that the man who can do juvenile agricultural work and secure the support of the com-



LIVE STOCK AT HIGH SCHOOL FAIR

The best livestock of the community is assembled each fall on the school grounds of the Union High School at Livingston. This fair has attracted from 2,000 to 3,000 people each year during the last five years

munity will be the one selected to continue the work as the county agent. He can find no better way to demonstrate his ability to do adult extension than thru successful high school activities.

The principal of the Pewaukee high school has worked in the school for two years teaching agriculture and supervising projects of the boys and girls. During this time no efforts were made to do adult extension work. In the spring of the second year a large spraying outfit was secured for use in laboratory instruction in the spraying of several orchards. The drive for greater production due to war conditions and the fact that spraying was needed brought requests from the farmers for the spraying of their orchards. The spare time of teacher and pupils after school and on Saturday was used, and 20 orchards were each sprayed twice. Later a four-row sprayer was secured, and over 50 acres of potatoes were sprayed for blight and beetles. The boys and girls received pay for the services given. The spraying of maple trees on the Edgerton school grounds for cottony maple scale developed a like demand and an advance in scientific methods in that community.

The Omro high school instructor, in teaching farm management, secured the farm account book used by the College of Agriculture in state farm management contest work. Several pupils decided to keep farm records for the year as a home project. The instructor found farmers in the community who were willing to keep farm records and to allow the school to supervise the work. The coöperation of these was sought, to make a group representative of all activities of the community and to give sufficient data for comparison with other sections of the state. At the end of the year the records were checked and data for the community were compiled as a class work. Data of interest to the farmers were presented in a public meeting called by the agricultural instructor, at which a member of the staff of the College of Agriculture was present to explain the work in its importance to the state work in farm management. The work has continued with from 15 to 79 farmers during the last four years.

A study of the farm's financial report followed into detail made it necessary to know the annual production of the dai cattle. Records of production of milk, bu ter fat and feed on several farms culminat in the reorganization by the farmers of cow-testing association which has no operated for more than three years.

Community Fairs

No one factor does more to stimulate t improvement of farm conditions than t agricultural fair. Here is the opportuni for one producer to compare his produ with that of his neighbor. His successes competition stir him to greater efforts, a his failures show him avenues for the i provement of his methods. The county fa is often remote, and the professional e hibitor of the county is the man who r ceives much of its benefits. A fair for smaller area is desirable, and the scho district is an admirable unit, particular when the agricultural instructor of the hig school is responsible for its developmer The fair should be the round-up of the pra tical work of the boys and girls of t school, and the opportunity for placing t results of their endeavors before t patrons of the school is important for i future. The school fair has equal encou agement and instruction for the boy and fe his father, and it may be the stimulus whic will direct him to the show rings of t county and state fairs.

The teaching of animal husbandry mak it necessary that classes be taken to t farms of the district for practice in liv stock judging. On these trips, then, it possible to study the methods of care a management of livestock as practiced in t district and to study the best livestock the community. To bring the school wor closer to the practical aspects of the liv stock industry and to assist in the develo ment of interest in animal husbandry, state livestock judging contest has been he for the last three years as a part of t boys' and girls' club work.

Agriculture is a mode of life, and in pre paring boys and girls to live that life bette the high school with its vocational course will have a greater influence. In the rura community we shall find the high schoo more than ever the heart of the community and its teachers leaders in the solution o its social and economic problems.

A Fire a Minute—and Why

Many Varieties of Carelessness Regarding Which Fire Chiefs and Fire Marshals Should Warn the Public

By W. E. Mallalieu

General Manager, The National Board of Fire Underwriters

AST year the loss of property in the United States thru fire aggregated approximately $250,000,000, accord-g to the best estimates now obtainable. his represents an increase of some $40,-0,000 over 1916 and is equivalent to the iping out of our entire production of gold id silver for nearly two years, taking 16 figures as a basis of comparison. Add e cost of extinguishment and the indirect sses caused by fire, and the amount of the ll exacted annually from the American blic by the consuming flame runs up into still more staggering total.

It is difficult for the general public to alize the extent of the property destruc-n caused every day by fire, but the rec-ds show that a fire occurs somewhere in e United States about once every minute, the average. It is apparently difficult, o, for the public to appreciate the fact at most of these fires are either wholly or partly preventable. The term "wholly or partly preventable" refers to the fires that occur because of lax observance of fire ordinances; inattention to proper preventive measures, and disregard of personal responsibility for care in handling inflammable materials and correcting hazardous conditions. In other words, most of our fires occur because of public or private carelessness. That one word, *carelessness,* covers the chief cause of our tremendous fire loss.

Figures for 1917 are not yet completely classified, but the detailed tables of causes for 1916, as reported to the National Board of Fire Underwriters thru its Actuarial Bureau, show a total of $208,705,340, "exposure" being marked with $41,237,168 (the heaviest debit under "partly preventable" losses), and electricity, the next heaviest, with $16,559,433. Incendiarism accounted for $8,121,816 damage. Under



THIS FIRE, CAUSED BY CARELESSLY INSTALLED ELECTRIC WIRING WHICH HAD NOT BEEN INSPECTED, DESTROYED A NEW 900-FOOT PIER ON THE BROOKLYN WATER-FRONT, THREE MUNITION SHIPS AND A NUMBER OF LIGHTERS AND BARGES

the "strictly preventable" causes, defective chimneys and flues stood in first place with a total of $12,742,317; and stoves, furnaces, boilers and their pipes, second, with $11,-204,875.

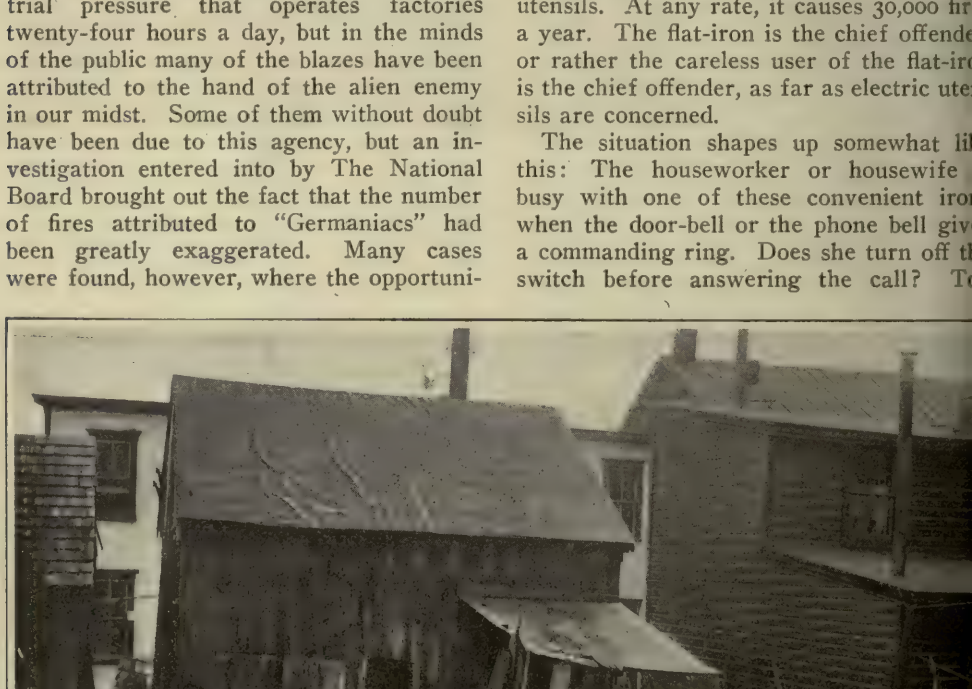
Smokers, by their careless use of lighted cigars, cigarettes and pipes, destroyed $8,-588,375 worth of property in 1916, the damage in New York State alone amounting to $1,374,615; and in Jersey City, not long ago, a $2,000,000 warehouse fire was caused by a smoking workman, who cast a lighted cigarette end upon the floor. The careless handling of matches, many of them by smokers, was responsible for $7,136,181 additional damage.

Since the war began, the number of fires in the United States has increased materially, in large part because of the industrial pressure that operates factories twenty-four hours a day, but in the minds of the public many of the blazes have been attributed to the hand of the alien enemy in our midst. Some of them without doubt have been due to this agency, but an investigation entered into by The National Board brought out the fact that the number of fires attributed to "Germaniacs" had been greatly exaggerated. Many cases were found, however, where the opportunities for the enemy to work unwatched we plentiful, largely because of the dangero practice of guarding warehouses, doc and other properties with aged watchme It has been proved that the employment the superannuated worker as a watchman one of the worst forms of carelessness.

The Electric Flat-Iron a Chief Offende

Electricity has been mentioned as t "partly preventable" cause of most fires its group. This does not include lightnin but covers the use of electric current f various purposes. It may cause a fire b cause conductors are poorly insulated a form a "cross," or come in contact with nail, a water-pipe, a metal support, or oth "ground," or it may start a fire while bei used to heat electric flat-irons or cooki utensils. At any rate, it causes 30,000 fir a year. The flat-iron is the chief offende or rather the careless user of the flat-ir is the chief offender, as far as electric ute sils are concerned.

The situation shapes up somewhat li this: The houseworker or housewife busy with one of these convenient iro when the door-bell or the phone bell giv a commanding ring. Does she turn off t switch before answering the call? T



FIRE-TRAPS AWAITING THE CARELESS INDIVIDUAL WHO DISCARDS HIS CIGARETTE, CIGAR-END OR LIGHTED MATCH, REGARDLESS OF WHERE IT MAY FALL

ften she does not, and in good many instances the on becomes overheated nd starts to burn the earest inflammable ma-rial. It may be an ar-cle of clothing, or it may the woodwork, but the esults are the same—a re in progress when she eturns. That is the con-equence of her careless-ess.

An instance is told of ie wife of a man con-ected with an electrical ipply concern in a west-n city, who was some-hat disturbed because of ie charge made locally iat the electric flat-iron as one of the most pro-fic causes of residential res. She feared the atement would damage er husband's business, id accordingly wrote a ng letter to the leading ily setting forth her re-ittal. It happened that the same day her mmunication was published, an electric-on set fire to her own home thru her own rgetfulness.

The $350,000 fire that destroyed the oston residence of Ex-Governor Draper Massachusetts was traced to an electric ate-warmer, and the home of John Wana-aker was burned because of an electric essing-iron being left in contact—to men-on only two well-known instances where ectrical apparatus has been the cause of rious fires.

An odd case of "electrical" fire occurred a Pennsylvania hotel about two years go, when a guest attempted, upon retiring r the night, to dry a damp undergarment wrapping it around a lighted incandes-nt lamp. The heat of the bulb, being con-ed by the garment, became so intense at the glass was softened and collapsed, aving the imprint of the cloth mesh upon e bulb. The garments took fire and used a dense smoke heat that nearly suf-cated its owner as he lay in bed. The tion upon this article of clothing indicates w careless and dangerous it is to use per shades upon incandescent lamps.



IF PROPERTY OWNERS OR TENANTS WERE MADE PERSONALLY LIABLE FOR FIRE DAMAGE RESULTING FROM CONDITIONS OF THIS SORT, SUCH LAXITY WOULD SOON BECOME RARE

Lightning, which accomplished $8,092,622 damage in 1916, may be considered by the casual bystander as "an act of God" and impossible to avoid, but it is not unavoidable. The installation of lightning rods upon buildings and the grounding of wire fences with metal supports go far toward nullifying the lightning hazard. It is only individual carelessness that delays the adoption of these safeguards.

It can safely be said that there is no fire hazard in existence which cannot be made considerably less dangerous by the exercise of care and the observance of the preventive measures prescribed by fire engineers.

Lessons from the Cantonments

Perhaps the most astonishing example of what may be accomplished with normally hazardous materials under proper supervision is found in the cantonments housing the National Army. When the first suggestion was heard of establishing sixteen new cities of highly inflammable wood to house a large population of husky young men, the insurance experts immediately sensed the terrific fire hazard about to be created. Consequently, The National Board

of Fire Underwriters at once offered to the Government the service of its corps of engineers to lay out the camps in such a way that fire would have as hard a time as possible to get started, and if it did get under way, would not be able to travel far. They wanted to anticipate the careless cook, the careless smoker, the overheated stove, and the many other factors they knew would develop. There never was any question of insurance involved; it was strictly a matter of public service.

Anyone who has been thru the cantonments has noticed that every few hundred yards there is a wide space between the buildings. These are "fire breaks," designed to prevent fire from communicating to neighboring structures, in case it should get beyond control.

This, however, was only one of the steps taken by the engineer to prevent the camps from being destroyed by fire and the army program seriously impeded. The other measures covered the planning of ample water-supply for the scientifically placed fire-hydrants; the equipping of all buildings with fire-buckets and apparatus; establishment of a fire department in each camp, and so on. The engineering force also supervised the installation of all electric wires and the setting up of heating apparatus. Every precaution was taken, in fact, so that fire would have small chance of getting under way.

The experts left little latitude for carelessness, and that they did their work well is attested by the fact that the fire loss upon approximately $100,000,000 worth of construction amounted to only $2,150 up to the time the camps were turned over to their commanders, and the cantonments have been notably free from fire loss since that time.

The success of the work at the National Army headquarters has been a feather of large proportions in the cap of the fire-prevention engineer and ought to have far-reaching results. It represents the fire opportunity of the fire engineering profession to have large cities built from the ground up according to their recommendations as to safeguards, and the results attained have justified their theories.

Roofs and Chimneys

The largest classification under "partly preventable" causes of fire in 1916 is that of "exposure," which resulted in losses aggregating $41,237,168. By "exposure" meant fires that were communicated other fires and which would not have curred had there been proper safeguard such as fire-resistive roofing materia sprinkler systems, wire-glass windows, fir doors, etc. Wooden shingles on the ro of a building only slightly set apart fro others invite the attention of sparks fro any neighboring blaze and are one of t chief "exposure" hazards. In the case an isolated structure, the sparks may con from a forest or prairie fire, so that in a case shingles constitute an important ha ard. In Indiana there were 932 fires d to shingle roofs during a recent six month with attendant property damage of $21 936. Nashville, Tenn., had a $1,500,0 fire in 1916 that was due to the shingle. fact, it is declared that there has been great conflagration in the history of t country wherein the shingle roof has n been a contributory factor in spreading t fire.

Under the "strictly preventable" cause defective chimneys and flues stand first point of loss, with a total of $12,724,31 There are certain prescribed rules for ma ing chimneys and flues safe, and the hous holder who ignores them is careless.

Other "strictly preventable" fire cause with their attendant losses in 1916, were firecrackers and fireworks ($275,409) natural and artificial gas ($1,815,597); h ashes and coals ($1,140,194); ignition hot grease and oily substances ($552,130) matches ($7,136,181); open fires ($1,11 853); open-flame lights ($2,142,958); ru bish and litter ($777,559); petroleum an products ($5,070,100), and stoves and fu naces, with their boilers and pipes ($1 204,875).

Matches and Gasoline

Over 700,000,000 matches are used in t United States every day, and with eac match holding the possibility of a confl gration within its head, it is not surprisin that they cause so many blazes. In ever fire-marshal bulletin, among the list causes the classification of "matches an children" is always prominent, despite th repeated warning to parents to kee matches where the little ones cannot g them. Countless homes and barns hav been burned by maternal and paternal care

:ssness in this regard. Adults, however, ave not the excuse of ignorance, and yet re shockingly careless with matches in a ariety of different directions. The Fire Iarshal of Louisiana, in fact, was moved ı a recent bulletin to burst into the follow- ıg verse as a method of calling attention) one path of destruction:

"He lit a match to read the meter;
"He's pleading now with old St. Peter."

Carrying open lights in the vicinity of as mains, however, is only one of the any forms of carelessness practiced by ıose who presumably have reached the ge of discretion. These habits embrace ot only such negative carelessness as al- wing leaky chimneys and flues to remain ırepaired, but also the handling of gaso- ıe and other highly inflammable materials ith a complete disregard for ordinary pre- :utions.

With the automobile even more common -day than the bicycle used to be, gasoline, :spite its cost, has come to be looked upon ıd handled almost as carelessly as water, tho the vapor from a gallon of gasoline hen mixed with air has an explosive ›wer equal to that of eighty-three pounds dynamite. Five million dollars' worth the fuel was carelessly destroyed by :e in 1917, altho it is vitally needed for ar purposes. The use of gasoline for nateur cleaning purposes has been a par- :ularly fruitful cause of fire damage and jury.

An Arizona newspaper tells of a gasoline cident in a characteristic western style at is worth quoting verbatim:

"Roger Ballard, of Douglas, washed his ›users in gasoline, about the middle of last ›nth. Mr. Ballard, after his labor, put on s nice clean trousers, and took out a cigar, th the best intentions of a fine smoke. If had not used those nice clean trousers for match scratcher he undoubtedly would have d a very satisfactory smoke, and in all prob- ility the physicians would have had no op- rtunity to pronounce his burns fatal."

Another victim of his own carelessness the man who fills a kerosene lamp while is lighted, or it may be a woman who is ilty of this offense against common sense. may happen, too, that the act becomes offense against the community by de- loping into a conflagration. The hospi- s have many "kerosene lamp" cases, and multitude of reports are filed daily which contain such cryptic comment as this:

....., South Dakota, Mrs. John Murphy, ... St., filled kerosene lamp while lighted; badly burned. CAUSE: Lack of good horse sense.

A still more dangerous practice, and one with an even smaller element of chance in favor of the perpetrator, is that of starting fires with coal oil. It is frequently done, however, and usually with but one result. As a certain western poet sings:

"Kerosene
"For starting fires
"Helps to fill
"Angelic choirs."

Frozen water-pipes are another cause of fire. The careful and most efficient way to thaw them out is to use hot water, preferably with a cloth wrapping to retain the heat. Nevertheless, people continue to burn their homes by using gasoline torches, lighted paper spills or similar dangerous methods.

The Chronic Habit of Taking Chances

Individuals in possession of their senses do not intentionally injure themselves, but we are a people owning a chronic habit of taking chances. This is, perhaps, a natural result of our rapid national progress and easily-made wealth, but it nevertheless is a dangerous habit.

There is a too general "I should worry" attitude on the part of the public, which is the result of the belief that so long as a loss is covered by insurance, only the insurance company suffers. As a matter of fact, insurance is merely a method of enabling the many to pay the losses of the few; and as the number of fires and the amount of the premiums must always bear a fixed relation to each other, the general public pays the bill, either directly or indirectly, in the form of higher rents or higher prices for commodities.

This is only part of the story, however. Property that is destroyed by fire represents a distinct loss to the nation. In the case of mills and factories which are burned, established constructive forces are rendered inoperative and there is an attendant loss of earnings that can never be made up. At the present time, when every resource is of crucial importance, carelessness that results in fire is not only reprehensible; it is distinctly unpatriotic.

Water Consumption in New York State Cities and Its Effect on Coal Consumption

From a Recent Report Compiled by the State Bureau of Municipal Information of the New York State Conference of Mayors

AN analysis and study of the data furnished by water-works superintendents about the per capita consumption of water in the cities of New York State and the amount of power used at water pumping stations show that millions of gallons of water now being pumped to consumers is wasted daily, and that as a result thousands of tons of coal are being unnecessarily consumed each year.

These statistics cover the following facts:

25 cities pump practically all of the water consumed.
15 cities have a gravity system exclusively, except that 2 pump in an emergency.
10 cities have a combined gravity and pumping system, 4 of these pumping from 50 to 92 per cent of their total consumption, and the others less than 50 per cent.
20 cities use steam power exclusively for pumping.
10 cities use electricity exclusively for pumping.
1 city uses natural gas exclusively for pumping.
1 city uses a combination of steam and water power for pumping.
2 cities use water power exclusively for pumping.
1 city uses a combination of water and electric power for pumping.
1 city uses a combination of water, steam and electric power for pumping.

Per Capita Consumption

The average per capita consumption of the 46 cities which give figures is 169 gallons per 24 hours, with an average of 52 per cent of their systems metered. Twenty cities report per capita consumption above this average. The United States Census Report (1915) gives the average per capita daily consumption of 201 American cities as 139 gallons, with an average of 40 per cent of their systems metered.

Seventeen New York State cities which pump at least a part of their water by steam or electric power have 75 per cent or less of their systems metered. The average per capita consumption of these is 234 gallons per 24 hours. Six of these report a per capita consumption above this average.

Fifteen cities in New York State whic pump at least a part of their water eith by steam or electric power have more tha 75 per cent of their systems metered. Th average per capita consumption of these 99 gallons per 24 hours. Seven of the cities report a daily per capita consumptio in excess of this average. Of the 2 American cities having at least 75 per ce of their systems metered, the daily averag per capita consumption is 96 gallons.

The daily average per capita consumptio of New York State cities whose systems a 100 per cent metered is 98 gallons, and th average of American cities all of whos services are metered is reported to be gallons. Fifty American cities having least 95 per cent of their systems metere reported a year ago to the Bureau that the average daily per capita consumption w 79.4 gallons. Before meters were installe the average daily per capita consumptio of 25 of these cities was 153.2 gallons.

The following tables give data about th per capita consumption of New York Sta cities in comparison with the percentage services metered:

ONE PER CENT OR LESS OF SYSTEM METERED

PUMPING SYSTEM

Name of City	Per Capita	Power
Cohoes	250	Electric
Tonawanda	550	Steam
Watervliet	230	Water
Salamanca	190	Electric

AVERAGE PER CAPITA, 305 GALLONS

GRAVITY SYSTEM

Name of City	Per Capita
Hornell	100
Kingston	242
Glens Falls	150
Middletown	114.7
Rome	325
Troy	280

AVERAGE PER CAPITA, 194 GALLONS

MORE THAN ONE PER CENT AND LESS THAN SI PER CENT METERED

PUMPING SYSTEM

Name of City	Per Capita	Power
Buffalo	329	Steam
Ogdensburg	114	Steam, wate electric
Oswego	200	Steam
Schenectady	140	Electric

AVERAGE PER CAPITA, 196 GALLONS

GRAVITY SYSTEM

Name of City	Per Capita
None	

MORE THAN FIVE PER CENT AND LESS THAN TWENTY-ONE PER CENT

PUMPING SYSTEM

Name of City	Per Capita	Power
urn	176	Steam, water
tertown	230	Water, electric
wich	250	Electric

AVERAGE PER CAPITA, 218 GALLONS

GRAVITY SYSTEM

Name of City.	Per Capita
lson	212
sterdam	228
stown	250

AVERAGE PER CAPITA, 230 GALLONS

RE THAN TWENTY PER CENT AND LESS THAN THAN NINETY-ONE PER CENT

PUMPING SYSTEM

Name of City	Per Capita	Power
ny	192	Steam
York City	111	Steam
gara Falls	284	Electric
sport	300	Electric
land	111	Electric

AVERAGE PER CAPITA, 199 GALLONS

GRAVITY SYSTEM

Name of City	Per Capita
le Falls	243

MORE THAN NINETY PER CENT METERED

PUMPING SYSTEM

Name of City	Per Capita	Power
hamton	91.4	Steam
ning	58	Gas
kirk	161	Steam
ira	100	Electric
eva	102	Steam
ca	50	Water
estown	65	Steam
n	100	Electric
via	107	Steam
hanicville	250	Steam
Vernon	66	Steam
Rochelle	76	Steam
hkeepsie	90	Steam
te Plains	70	Steam
kers	98	Steam

AVERAGE PER CAPITA, 99 GALLONS

GRAVITY SYSTEM

Name of City	Per Capita
on	46.5
ersville	111.6
da	214
ester	100
cuse	137.5

AVERAGE PER CAPITA, 122 GALLONS

Average Per Capita Consumption

Altho all comparisons above quoted show t those cities which have metered more n 75 per cent of their services and have en reasonable precautions to prevent ste and leakage of water have an aver- per capita consumption of less than 100 lons daily, and some very much less, we re taken the average of 100 gallons as a iservative figure in determining the indi- ed unnecessary consumption of coal due waste and leakage of water by con- ners. Many believe it unfair to figure use of water on a percentage basis for purpose of comparing the per capita one city with that in another, without t excepting all manufacturing plants which use probably more than the whole of the other population. It is true that the per capita of a manufacturing city cannot be accurately compared with that of a distributing and residential city, but we believe that by taking the high average per capita of 100 gallons we have a conservative basis for ascertaining the indicated coal waste due to water waste and leakage.

Coal Wasted in Steam Pumping Plants

As an illustration of the waste of coal in steam pumping plants because of an excessive consumption of water, we have taken five cities which pump all of their water by steam power and use from 1 ton to 2½ tons of coal to pump 1,000,000 gallons, the amount varying with the distance, pressure and height. According to the figures furnished by the heads of the water departments or companies, these cities pump 41,243,220,255 gallons a year more than they would if their average per capita consumption were 100 gallons daily. It now takes 43,512 tons of coal to pump this amount of water in these cities, which are Buffalo, Oswego, Tonawanda, Cortland and Dunkirk. While the saving in coal would not be in exact proportion to the saving in water, they are fairly comparable.

How Cities are Reducing Water Waste

As a means of reducing water waste in cities in this state, eighteen municipalities either advocate the installation of meters or have installed them; thirteen are inspecting house fixtures; seven are doing nothing, one which uses steam power reporting that it finds any effort useless; one advocates decreasing meter rates and increasing flat rates; seven use motion pictures, circulars and newspaper notices and advertisements; and two send leak notices.

Summary of Conclusions

The average daily per capita consumption of water in New York State cities is higher by 30 gallons than the average in the 201 American cities reporting to the U. S. Census Bureau.

Twenty-four New York State cities have a higher daily per capita consumption than the average in the 201 American cities.

Sixteen New York State cities which pump at least part of their water either by electricity or steam or both, have a higher

daily per capita consumption than the average daily per capita consumption of those New York State cities which have at least 75 per cent of their systems metered.

By reducing leakage and waste of water so that the daily per capita consumption will not exceed 100 *gallons, nineteen New York State cities can save approximately* 75,000 *tons of coal a year. This is a conservative figure.*

At least thirty New York State cities can conserve their water supplies by reducing their daily per capita consumption, thereby reducing the cost of pumping and filtration in those systems where pumps and filters are operated, and at least postponing the need for large expenditures for extension and increased supply or storage capacity. They can also reduce the expenditures for pumping equipment.

A study of the data furnished by the cities shows conclusively that effective means to reduce waste and leakage of water should be taken in more than one-half the municipalities of the state, and that in at least one-fourth of the cities a reduction in the power consumption will effect a large saving in coal, which is necessary, particularly at this time.

Ways in Which Water Waste and Leakage Can Be Reduced

In those cities whose per capita consumption now exceeds 100 gallons daily, a campaign of education can be conducted among water consumers to stop the deplorably high percentage of waste and leakage and thereby conserve coal. Plans can also be perfected and carried out to install meters on all services. Rigid house-to-house inspection to stop waste and leakage from defective fixtures will also be effective. New York City has found such inspection to be very helpful, and it has shown excellent financial results.

The most effective means of preventing waste is the installation of meters. Prejudice among consumers is built on ignorance. The experience of American cities which have their entire system metered is that metering does not reduce consumption beyond a point that is detrimental to public health, and a suitable minimum charge with a reasonable consumption allowance will obviate this danger. It does not increase the cost of water when used in reasonable amounts. It conserves the water-supply, reduces the cost of plant operation and maintenance, and eliminates waste of fuel, which, under existing conditions thruout the world, is now a criminal practice. All cities which have had experience with meter systems agree that it is the most economical and just way of selling water.

Other methods of reducing waste and leakage are:

1. Strict maintenance of meters with frequent tests.
2. Rigid collection of high bills due to leakage. This makes consumers watch their fixtures and will educate them.
3. Efficient complaint department, including the education of the public.
   a. Record of all complaints in card system.
   b. Comprehensive written reports of complaints to complainants.
   c. Use of recording detector, which is substituted for meter and gives rapid record of consumption for last 24 hours.
4. Installation of recording pressure gauge and a master meter directly on distribution system. This combination enables one to estimate rate of consumption during night due to leakage alone, noting progress each day in stoppage of leaks, and determining necessity for making a special survey, and determining efficiency of pumping station attendants and pumps.
5. Waste survey.
   a. Pitometer survey.
   b. "Hydrant and hose method."
6. Educational campaign. A series of bulletins containing the facts in this report applied to local conditions should have a wholesome effect on consumers. Just now it is a patriotic duty to conserve coal. This can be done in every city which pumps water other than by water power, by eliminating waste water. These bulletins can be published in the newspapers or printed in leaflets and distributed in various ways. Lectures on water waste can be given in all schools. Appeal can be made to motion picture houses to display appropriate water-waste slides. A comprehensive and vigorous campaign to stop wasting water should be as effective now as has been the food conservation campaign in reducing the contents of the garbage pail.

FORWARD STEPS
REPORTED TO THE AMERICAN CITY BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

For this department the editors will welcome short articles from city, town and county officials and heads of departments, on subjects of interest and practical value to others engaged in similar work. Photographs, plans, or other illustrative material should accompany the articles whenever available.

MAYORS

Combination City Hall and Community House

TYRONE, PA.—The Municipal Building of yrone, Pa., is a combined City Hall and ommunity House, built partly by bond isie. It was started about two-and-a-half ears ago, and officially opened on New ear's Day, 1918.

Few communities as small as this, arcely nine thousand, have anything like comfortable and sightly an edifice. The uilding is fireproof thruout and is conructed of buff and white brick with tile immings, spendidly lighted on all sides. is constructed of Pennsylvania material, en to two Burley heaters, which provide e steam heat for the building, which is holly "made in Tyrone." Two stories ce upon Logan Avenue, with the baseent entrance on 11th Street. In the baseent are three modern jail rooms equipped ith up-to-date tiers of cells, one of which for women and juvenile prisoners. The urt room for preliminary hearings is also this floor. A room for the use of the trolmen of the police force, which is also ed for voting purposes in that ward, sevral storerooms and a storage vault for cuments and papers, together with the iler room, complete the basement.

On the first floor are the offices of the urgess, Chief of Police, Boro Secretary d Boro Solicitor, and two rooms which e now occupied by the Local Draft Board. large room extending the entire length of e building at the rear was designed to be community room; it is finished in polished estnut with exposed beam ceiling and led floor. This room has been turned over to the Hospital Garment and Surgical Dressing units of the Red Cross for the duration of the war. The rest of the building is finished in natural oak, except the Council Chamber on the second floor above the Community Room, which is finished and furnished in mahogany effect. On this floor, two rooms have been reserved for the Grand Army of the Republic as long as the Post has use for them. The Council Committee room next to the Council Chamber has been loaned to the Knitting Department of the

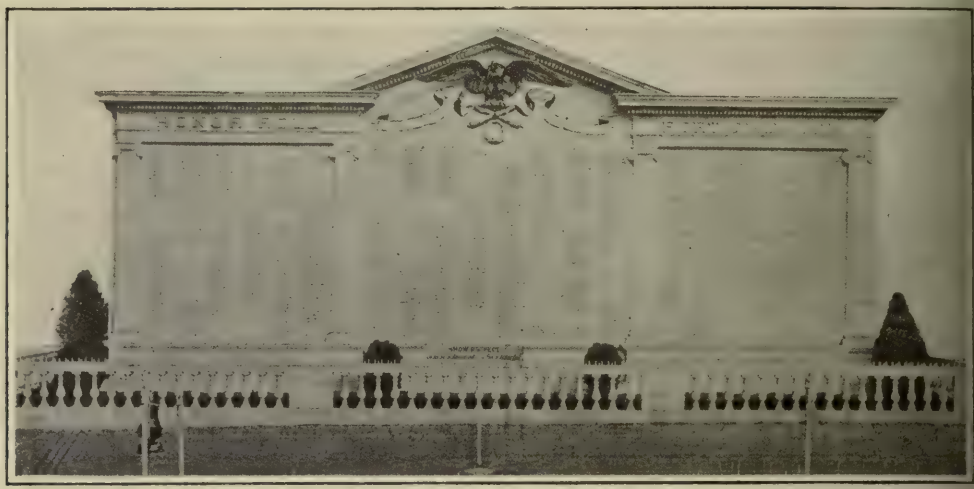


COMMUNITY BUILDING AND CITY HALL, TYRONE, PA.

Red Cross. The local Chamber of Commerce occupies two rooms on the 11th Street side of the second floor, and the rooms of this organization are used in a large measure for the community purposes for which the community room proper, on the first floor, was intended, and for which it will be used at the end of the war.

This compact, convenient, little building was constructed at a cost of about $32,000, but could not be duplicated to-day for that price.

RICHARD BEASTON,
Burgess.



TEMPORARY HONOR ROLL, PORTCHESTER, N. Y.

How Port Chester, N. Y., Honors Her Sons

PORT CHESTER, N. Y.—In Liberty Square, the very center of the village of Port Chester, where trolley cars meet every few minutes and where hundreds of people gather daily on their way to and from business, stands this community's tribute of love and reverence to her valiant sons who have gone forth to defend the honor of our nation in the great world conflict.

Features of the Design

The Honor Roll, with its classic pilasters, its low pediment and delicate mouldings, its graceful lines and perfect proportions, is a wooden structure 36 feet long and 13 feet high, coated with a fine white sand which gives it the appearance of granite. Three panels make up its composition, the end panels being slightly narrower than the center one. Projecting over the center panel is a golden American eagle which measures 7 feet from tip to tip of its wings. Beneath the eagle are two crossed cannon surmounting a wreath of victory. Streamers of blue with the words "Soldiers and Sailors" in white, arranged to reveal a red reverse side, complete a well-balanced but simple scheme of ornamentation. In the frieze over the left panel are the words HONOR ROLL in raised gold letters, while in the corresponding frieze over the right panel are the words PORT CHESTER.

Surrounding the roll is a railing which harmonizes with the monument itself. Attached to the inside of the railing pilasters are four 100-candle-power electric lights which illuminate the structure at night.

Names Easily Changed

The names are painted in black on wooden strips and then nailed in alphabetical order to the panels. They can easily be removed or changed. The men who have been killed or have died in the service are indicated by a black border and a gold star to the left of the name. Nearly one thousand names already appear on the panels, which provide room for twelve hundred in all. By utilizing the base, over two hundred more can be attached.

The space in front of the roll, inside the railing, has been sodded, and at each end is an Irish juniper tree and a Japanese umbrella plant. The closely cut green grass and trimmed miniature box hedges which skirt the railing add very much to the beauty and attractiveness of the Honor Roll. Above the center panel there floats an American flag.

More Lasting Memorial Planned After the War

The Honor Roll is only a temporary structure. When the war is over the people of Port Chester intend to replace it by some permanent monument, perhaps a Liberty Building, which will be a lasting memorial to her sons who did their part in the struggle for freedom and democracy.

ARTHUR R. WILCOX,
President of the Village.

CITY MANAGERS

ow Motorizing Pays for Itself in a Small Fire Department

XENIA, OHIO.—Prior to the installation the city manager form of government on nuary 1, 1918, the Xenia Fire Department as just as it had been for forty years. he equipment was horse-drawn and di-ded among two stations, and was handled five regular men, a sub-driver, five pipe-en, and three teams. The chief received 5, four regular firemen $60 each, the sub-iver $50, and the pipemen $10 each per onth. The smaller house has now been andoned, one team and wagon disposed , and the fire company reduced to five gular men and two extra men. The regu-rs receive $75 each, and the extra men $10 ch per month, a reduction of $20 per onth on men, $32 a month on the keep of e team, and $12 a month on the building, aking a total of $64 per month.

This change was made possible by the otorization of one piece of equipment. he combination wagon was a cumbersome ece, weighing 5,500 pounds when fully uipped—too heavy for a team to draw—d was therefore obsolete. It had not been t of the station for three and one-half ars.

Soon after the manager plan went into fect, the proposition of motorizing this heavy piece was submitted to several medium-priced auto truck firms. The Republic Dayton Motor Sales Company, of Dayton, Ohio, was the successful bidder, and for $1,965 it took the body off of the horse-drawn gears and mounted it on a Republic one-ton chassis, furnishing oversized pneumatic tires, a large siren horn, and a search-light. The new outfit, which is capable of a speed of thirty-five miles per hour, is painted and decorated to look like any first-class fire apparatus of its kind. The sale of the old equipment and the saving in operation costs is as follows:

Total cost of motorizing		$1,965.00
Sale of old fire bell	$135.00	
Sale of running gears of combination wagon	75.00	
Sale of team	125.00	
Sale of hose wagon	95.00	
Sale of harness	35.00	
Sale of one 35-gallon chemical tank	40.00	
	$505.00	
Saving on operating expense $64 per month, less $10, the cost of truck operation, 27 months at $54	$1,460.00	
	$1,965.00	$1,965.00

The motor piece has been in use two months and has made thirteen very successful runs.

KENYON RIDDLE,
City Manager.

✣ ✣

Making Partners of the Taxpayers

AUBURN, ME.—This city adopted commission-manager government last fall and appointed its first city manager in February of this year. In spite of the abnormal con-



OLD CHEMICAL COMBINATION BODY MOUNTED ON REPUBLIC ONE-TON CHASSIS, USED BY THE FIRE DEPARTMENT OF XENIA, OHIO

ditions engendered by the war, we expect that the first annual report under the new plan will give evidence of progress that will gratify most of the ardent enthusiasts, and tend to pacify the "conscientious objector." Among the "forward steps," one of the most significant is a contract recently let for a comprehensive city plan with an industrial survey, to guide the growth of the city for the next fifty years.

Coöperation by Publicity

A splendid spirit of coöperation is being developed by continuous, progressive publicity. One of the most effective means yet used is a letter mailed with the tax bill to each of Auburn's 7,000 taxpayers. On this tax bill three new features appear: (1) a table showing the distribution of each tax dollar, so that a citizen may know just how much he is contributing to each enterprise and activity of the city; (2) a table giving the population, assessed valuation, valuation per capita, tax rate and tax per capita of the ten Maine cities nearest Auburn's size (the ten largest in the state); (3) a plain statement of the dates and facts concerning the collection of taxes.

The letter referred to is as follows:

AMONG OURSELVES

As a stockholder in this corporation, the good city of Auburn, you are cordially invited to take a more active part in its business affairs.

There are a few facts with which you, as a paying member of this fraternity, should be familiar. Effective coöperation can come only thru mutual understanding and confidence.

Auburn has an area approximating 75 square miles, making it the seventh largest city in the United States, territorially. We have some 360 miles of roads, with less than five miles of permanent pavement, and most of this in need of repair.

On January 1 of this year our total debt was placed at $534,200. Of this, $86,500 is a floating debt consisting of temporary loans passed on to us from former administrations. The balance, $447,700, is our bonded indebtedness, made up, in large part, of refunding loans for old debts handed down from past generations. We had in the sinking fund toward payment of this debt the sum of $24,905, of which $16,500 is a demand note on ourselves, the money having been drawn from the sinking fund and used for current expenses some time ago.

We mention these facts with no intent of criticism, and the assets received by the city for the money spent are worth far more than the amount of our debt. Nevertheless, the payment of the debt must be made by the taxpayers, sooner or later, and the interest we pay each year would be sufficient to pave several miles of highways.

We are forced to operate on borrowed money thruout the year, due to the fact that our taxes are collected so late in the fall.

Where the Taxpayers' Dollars Go

On the tax bill sent you herewith, you will notice how we compare with the other cities in the state. Were it not for war-time conditions, we should have made the Auburn tax rate still lower this year. You will also notice where one dollar of tax money goes. If you multiply your tax bill by these figures you can find out just how much you are contributing toward the various lines of city activity.

We are now compiling a tax map to show every lot and building in the city, and have already discovered several thousand dollars' worth of property which has heretofore escaped taxation.

In common with other industries, we are greatly handicapped by the shortage of labor and materials. Under instructions from Washington, we are permitted to make only such improvements as will help to win the war. Winning the war is our first concern. There are, however, a great many small improvements and repair items that we can handle, and on the space provided herewith we ask that you advise as to wherein the city may be of greater service to you this coming year.

Suggestions Invited

If you wish new sidewalks, catch-basins, or street lights, kindly make your petition on this blank. If your petition is not granted, it will be because of conditions which make a postponement necessary or at least advisable. We can only promise that each petition will receive careful consideration. We ask for them at this time so that we may have them before us when drawing up our budget for 1919.

One word in closing. Do not be afraid of "bothering" the manager. He is employed by your representatives on the City Council for the very purpose of being "on the job" all the time. The most democratic feature of the commission-manager plan is the opportunity for direct contact between the people and the manager.

His telephone number is 105-R, and his office is at the City Building.

The "tale of woe" in the preamble has several distinct purposes: The new administration is greatly handicapped by conditions not of its creating. Ignorance of these conditions on the part of the taxpayer might easily lead him to expect results from the new plan which the conditions render difficult, if not impossible. The new charter provides that the time-honored custom of refunding bonds be ultimately abolished, and this may mean an increase in the tax rate. The new administration has no desire to shoulder responsibility for an increase

of this sort, made necessary by generations of "buck-passing." In fact, it will do everything possible to so economize in other expenditures that the debt may be raised without a tax increase. We have every prospect of closing the year without a current deficit, for the first time in years, in spite of the fact that the tax rate, the lowest of any city in the state, has not been raised. Again, the time for paying taxes will doubtless be pushed ahead next year. A little "propaganda" at this time may save remonstrance later.

Replies Show People Appreciate the Opportunity

The replies to the letter cover a range of unexpected magnitude. Many who had no "kicks" have personally expressed their appreciation of the opportunity. As an illustration, one man remarks that he has lived here fifty years and paid hundreds of dollars in taxes and that this is the first time anyone has asked his opinion or permitted him a voice in public affairs. At the close of the letter a blank space is headed: "Suggestions and Petitions," with spaces for date, name and address and the request that the same be handed or mailed to the city manager.

In this way we are seeking to make the city manager's office the partner and true servant of the people.

HARRISON GRAY OTIS,
City Manager.

PUBLIC WELFARE - AND SERVICE -

Garbage Disposal in Akron

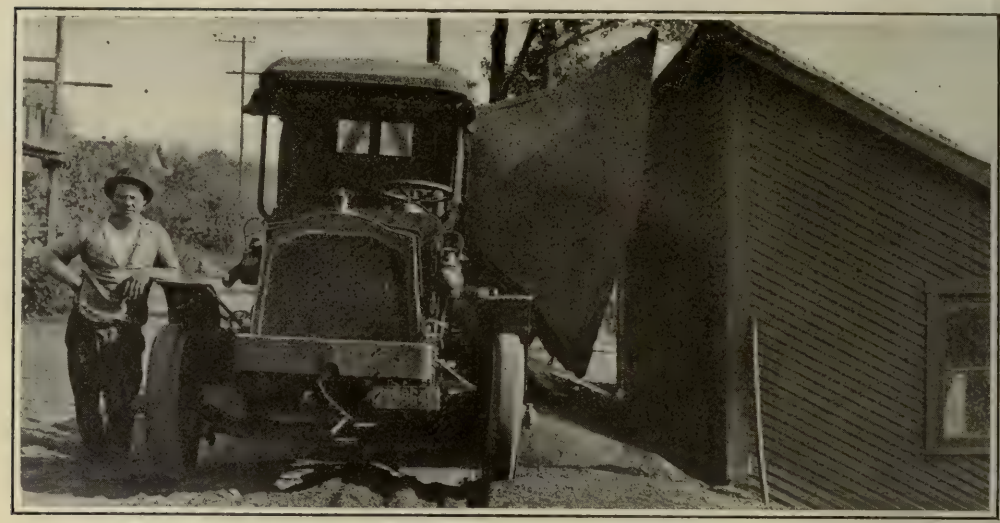
AKRON, OHIO.—Before the introduction of Akron's new garbage collection system, wagons were used to convey the garbage to the disposal plant located about two miles from the heart of the city, a slow and costly process. Under the new system installed by the Akron Garbage Collection Company, which leased the plant and privileges from the city August 1, 1917, the garbage is delivered by the collection wagons to a central loading station very nearly in the center of the city, from which is it conveyed by a Packard truck with a specially constructed "V"-shaped body to the disposal plant, where it is placed in the tanks for cooking.

The first of the accompanying photographs shows the overhead drive leading to the platform. The small house on the left-hand side is the City Weigher's office, where each wagon-load of garbage is weighed as it comes in. The scales are in front of this weight house and are adjusted so that there is no vibration when the team is pulling up to the platform.

This photograph also shows the seven bins into which the garbage is dumped. After a wagon-load of garbage has been



GARBAGE BINS, WEIGHER'S OFFICE AND TRUCK USED IN REMOVING GARBAGE, AKRON, OHIO



PACKARD TRUCK WITH SPECIAL BODY, JUST AFTER DUMPING LOAD AT AKRON GARBAGE DISPOSAL PLANT

weighed, the team is driven over to the platform, the wagon is backed to the hopper and the load emptied.

Each bin is lined with galvanized iron, which allows the garbage to slide freely, with the result that no garbage is left in the bin after the gate has been opened. Naturally, there is a certain amount of garbage water that comes in on every wagon-load. This drains out thru the doors, falling on the concrete pavement, and is washed into the sewer, thereby eliminating a feature which is usually undesirable at the disposal plant.

The bins are controlled by levers, upright when closed, but pushed over 45 degrees to the left to open, as shown on the first bin in the photograph on the preceding page.

Economies of the New Equipment

The truck is backed under the hoppers and the levers released, and the garbage then falls into the specially constructed body on the truck, which consists of three compartments. The reason for having three compartments is the fact that en route to the disposal plant there is a long, steep hill, and the partitions check whatever garbage water there might be present from spilling over the back end.

By the old method, using a team, it took one hour and a half to make the trip from the loading station out to the disposal plant. The truck hauls from four to five wagon-loads of garbage and makes the round trip in one half-hour. Hauling by railroad was anticipated, but, on account of the heavy railroad traffic, that idea was abandoned.

The second photograph shows the truck after it has emptied its load at the disposal plant. Upon arrival at the disposal plant, the braces are removed from the truck, and by means of a block and tackle the driver allows the body to empty on its side as slowly as he desires. The body is so constructed that it can dump on either side. The garbage then slides down a sheet-iron-surfaced incline, where a conveyor takes it into the factory, carrying it into the tanks, where it is then cooked. One man operates the truck.

Operation at Disposal Plant

The garbage, on being received at the garbage plant, is fed by conveyors into big vats called digestors and cooked under 70 pounds steam pressure for 8 hours. It is then pressed to about 50 per cent moisture under equal pressures of steam, and then pulled out of the digestors onto the conveyor, which carries it to an open drier, where it is dried to about 15 per cent moisture.

The liquid from the digestors is run into a settling basin which allows the grease to be skimmed off, and is then put into a double-effect evaporator and reduced to 26 degrees Beaume. This is what we call

"stick," which is put back into the tankage after the tankage is percolated, and ground before it is put into the secondary drier, where it is dried to about 4 or 5 per cent moisture. This finished product is called "fertilizer base."

The percolating of the tankage for the extraction of grease is as follows: The tankage is conveyed into a vertical cylinder, and then the doors are all sealed; gasoline is pumped into the tank and allowed to stand for about five minutes; this gasoline, carrying the grease with it, is then pumped into a vaporizer tank (this washing process is done three or four times), where the gasoline is vaporized and passed thru a condenser, which reclaims the gasoline, leaving the grease in the vaporizer tanks to be pumped off into the grease storage tanks.

The construction of the bins and their operation, as well as the use of the specially constructed body of the truck, were purely experimental, but the entire equipment has proved wonderfully successful.

HOWARD S. MORSE,
Director of Public Service.

PUBLIC WORKS DEPARTMENTS

Electric Thawing Apparatus on Runners

TRENTON, ONT.—Because of the extensive trouble experienced last year thruout the country with the freezing of water services, a description of the thawing apparatus used at Trenton may be of service.

Electric thawing of water pipes comes near to being the ideal method of overcoming the difficulty. There is no digging, no splitting of pipes, nor shutting off of the water to other consumers. All that is necessary is to connect a wire to each end of the frozen pipe and pass sufficient current through the circuit. The chief drawback is the extremely severe weather at times encountered by the linemen while at this work.

Our apparatus consists of transformer, cut-out, water resistance ammeter, switch and 500 feet of copper wire on reels. We use a 15-K.W. transformer connected to give 110 volts on the secondary side. We regulate the current by means of a barrel of salt water, the resistance used, however, being generally very small. The ammeter is of the portable type. The entire outfit is mounted on a sleigh, drawn by one horse.

In Trenton the primary distribution system is 3-phase, 4-wire, with 2,200 volts between any phase and the neutral or ground. As a result, only one side of the transformer primary need be connected to the line, the other being permanently grounded to one of the large secondary wires. Our crew consists of two men as a rule, altho sometimes three are used.



PIPE-THAWING APPARATUS USED AT TRENTON, ONT.

Several Service Pipes Thawed at One Set-up

Most of the trouble encountered last year was in wrought-iron service pipes of the half-inch variety, altho we were frequently called upon to thaw out larger pipes. For the half-inch pipes, 180 amperes proved most efficient. This would heat an empty pipe to about 200 degrees Fahrenheit in 15 minutes, but with water running in the pipes this temperature, of course, was not attained. For thawing service pipes only, where the mains were free from ice, the two secondary wires were attached to different houses that were without water, and both were thus thawed out at the same time. Sometimes as many as six or eight services were thawed out with one set-up. In thawing mains, it is well to have one wire connected ahead of the freeze-up. The other may then be attached to any convenient tap along the frozen main.

Stronger Outfit Held in Reserve for Larger Pipes

For thawing larger pipes, a 25-K.W. transformer, mounted on another sleigh, was used, but as high as 200 amperes was obtained from the 15-K.W. transformer when necessary. We were frequently requested to thaw soft-water pipes, soil pipes and even sewer pipes. In Guelph, an underground cable in a conduit which had been flooded and frozen was thawed by 50 amperes in 30 minutes.

Cost to Consumer Low Compared to Charges Elsewhere

In Trenton, the electric and water utilities come under the same management, and some thawing jobs were charged direct to the Water Department. In cases where the consumer bore the expense, the time of the men and horse and the current used, plus a small profit for depreciation of the apparatus, averaged between $1.50 and $2.25. This, we believe, compares favorably with the prices reported by the *Electrical World* as obtained elsewhere, in some cities the average return for each job running as high as $13, with a minimum of $10. Where the Electrical Department is entirely distinct from the Water Department, the use of such an apparatus should net a distinct profit, besides giving the satisfaction of supplying a timely service to the people.

FRED C. ADSETT,
Local Manager, Hydro Electric Power Commission of Ontario.

Editorial Note.—The entire Central Ontario System is owned by the Ontario Government and operated by the Hydro Electric Power Commission. It is the intention ultimately to give to each municipality an opportunity of taking over the system within its boundaries, the same as thruout the rest of the province.

Snow Scratcher for Roughening Sidewalks

Ottawa, Ont.—The accompanying photograph shows a device for roughening the snow-packed surfaces of sidewalks which we have found very satisfactory in Ottawa. The scratcher is about 3 feet wide, with prongs placed approximately 3 inches apart. It is simplicity itself, can be drawn by one horse and has practically no moving parts to get out of order. When used on the slippery surface of the sidewalk it roughens the snow, so as to make walking relatively safe and easy.

ANDREW F. MACALLUM,
Commissioner of Works.

CITY ENGINEERS

Chicago Develops a Non-Slip Bridge Approach

Chicago, Ill.—In common with other cities, Chicago has been bothered by traffic delays resulting from slippery bridge approaches, but after some experimentation we believe we have found the remedy. We are now taking up all wood-block pavement on bridge approaches and relaying it with a one-inch creosoted strip or spacer extending from the bottom of the pavement to within one inch of the top. The one-inch square opening thus formed between the rows of wood blocks is filled with grout made of coarse sand and gravel. Under rain and sleet conditions, when the old pavement was most slippery, this new layout has proved, upon trial, most satisfactory.

JOHN ERICSON,
City Engineer.



HORSE-DRAWN SNOW SCRATCHER, OTTAWA, ONT.



FEDERAL TRUCK WITH SPECIAL BODY AND "ORANGE PEEL" BUCKET FOR CLEANING CATCH-BASINS, CAMBRIDGE, MASS.

Catch-Basin Cleaner

CAMBRIDGE, MASS.—One of the major items in the cost of maintaining a system of sewerage in a modern city is the taking out and disposal of material retained in the street catch-basins, which usually form an important part of the system.

The constantly increasing cost of this work in Cambridge, Mass., due partly to advances in prices paid for labor, teams, etc., and partly to the increasing lengths of hauls to the disposal dumps, led to an effort to substitute motor-operated apparatus for the old type of man-filled horse carts.

Various types of excavating apparatus were examined, and a type was finally adopted quite similar to that made and in use by the Public Works Department of Pawtucket, R. I., as being best fitted for the conditions existing in Cambridge. The two photographs show quite clearly the general type of the machine and its main features.

A 3½-ton Federal truck was purchased and equipped with a large steel body of 3½ cubic yards capacity fitted with a power dumping hoist, and the special machinery for excavating the material and loading it into the truck body was made in a local machine shop from drawings prepared in the City Engineer's office. The excavating is done by a bucket of the "orange peel" variety, having four jaws which are opened and closed by compressed air. The bucket is dropped into the material and closed. This fills the bucket, which is then hoisted by the chain, swung over and opened, and drops the contents into the truck body. The compressed air is furnished by a Rand-Ingersoll type 12 air compressor mounted on a frame attached to the truck frame.

Power to drive the air compressor is obtained by a sprocket chain take-off to the left from the truck propeller shaft. Power to drive the bucket hoist is obtained by another sprocket chain take-off to the right from the same shaft. By a simple combination of gears, clutch, and foot brake, the bucket is raised or lowered at will. Thus the truck engine furnishes all the power for the entire operation of the plant—compressed air, bucket hoist, dumping hoist, and transportation to the dumping place. Owing to long and vexatious delays in getting the materials and having the machine work done, the machinery has been completed for

only a few months, altho the truck has been at work since last October, being filled by hand. The machinery is now in almost continuous operation, has greatly expedited the catch-basin cleaning work, and has materially lowered the cost, besides making the work—none too attractive at its best—more cleanly and satisfactory to the men.

L. M. HASTINGS,
City Engineer.

- HEALTH - DEPARTMENTS

Fighting Influenza with Transit Systems

NEW YORK, N. Y.—When the influenza situation developed in New York, the Board of Health promptly took the matter in hand and called into play some of its vast powers. On October 5 the following resolution was adopted:

Resolved, That the resolution adopted by the Board on October 4, regulating the working hours of various trades, businesses and occupations, be and the same is hereby amended to read as follows:

1. That all buildings, premises or places used and occupied for purposes of commerce, manufacture, trade, industry, labor or recreation, in so far as the same are hereinafter more particularly specified and classified, shall maintain hours of opening and closing in accordance with the following schedule:

(a) All retail stores except dry goods, food and drug stores shall open at 8:00 A. M. and close at 4:00 P. M. Retail dry goods stores shall open at 9:45 A. M. and close at 6:15 P. M. The hours of opening and closing retail food and drug stores are not affected by this order.

(b) All wholesale and jobbing establishments shall open at 8:15 A. M. and close at 4:15 P. M.

(c) All offices shall open at 8:30 A. M. and close at 4:30 P. M., provided, however, that where offices are maintained in connection with and in the same buildings with any of the trades, businesses or occupations otherwise regulated by this order, and where such offices are so located, the hours of opening and closing shall conform with those prescribed for such trades, businesses or occupations, and provided, also, that any office may close at 3:30 P. M. or earlier in any cases where it is so desired. It is understood, however, that the opening hour is in no wise affected by the last provision.

(d) All textile manufacturing establishments shall open at 9:00 A. M. and close at 5:00 P. M.

(e) All non-textile manufacturing establishments shall open at 9:30 A. M. and close at 5:30 P. M., provided, however, manufacturing jewelers shall open at 7:45 A. M. and close at 4:45 P. M., and paper-box manufacturers shall open at 9:30 A. M. and close at 6:30 P. M.

(f) Lithographers and printers shall open at 7:45 A. M. and close at 4:45 P. M.

(g) Storage warehouse establishments shall open at 7:30 A. M. and close at 5:15 P. M.

(h) The opening and closing of banks, trust companies, and offices of the United States Government are not affected by the provisions of this order.

(i) All establishments formerly opening before 8:00 A. M. and closing later than 6:00 P. M. shall not be disturbed. The particular purpose of this exception is to prevent any interference with munition factories or war industries.

(j) Theaters and places of amusement are not affected as regards afternoon performances, but they shall open their evening performances in accordance with the following schedule:

At 7:00 P. M.—All motion picture theaters between 14th and 59th Streets which seat more than 750 persons
At 8:00 P. M.—Five specific theaters and all two-a-day vaudeville houses
At 8:15 P. M.—[Fourteen specific theaters]
At 8:30 P. M.—[Ten specific theaters]
At 8:45 P. M.—[Eight specific theaters]
At 9:00 P. M.—[Nine specific theaters]

An Emergency Measure

This was an emergency measure, conceived and executed in less than four hours, and consequently it has many faults that might be eliminated in a more carefully considered scheme. It has been of great advantage, however, in reducing congestion, and the results obtained lead us firmly to believe that some perfected system of this sort will certainly be adopted for New York City in the not distant future. This Department's direct control of this situation will end with the present epidemic, but it is our earnest hope that the merchants and other employers of labor in New York City, the transportation lines, and the governing officials will work out some acceptable plan along these lines.

ROYAL S. COPELAND,
Health Commissioner.

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Combatting Disease in Iowa

DAVENPORT, IA.—The local Board of Health is taking a great interest in all movements to help the Government to combat venereal diseases. A detention hospital in charge of the county physician has been opened. In this we treat patients without charge and detain them until their discharge is recommended by the county physician. A number of patients are allowed their liberty on the condition that they report to a doctor once a week. If they fail, the physician reports it to this office and we have them picked up and removed to our detention hospital. We are using the newspapers and the screens in motion picture houses to call the attention of the public to the need for precautionary measures. Our police are alive to the situation, with the result that street conditions are much improved.

To combat the epidemic of Spanish in-

fluenza, we are at the present time placarding the houses of victims with a warning card, and instructing inmates as to what to do. At a meeting a few days ago, attended by delegates from all the local organizations for war activities, a special committee was appointed to combat the spread of the disease, with power to procure a building to be used as an emergency hospital and to provide nurses, medicines, etc. We are asking authority of the Iowa State Board of Health to quarantine all cases, as we believe that quarantine is the quickest and surest way to stop this epidemic.

THOMAS P. KENNEDY,
Health Inspector.

WATER DEPARTMENTS

Three-Ton Truck Outfit for Thawing Water Pipes

North Attleboro, Mass.—Like a majority of the water-works departments in New England, last year we experienced the most severe winter known. The frost penetrated to a depth of from 3 to 6½ feet, depending on the nature of the soil. Last winter the frost reached not only to the service pipes supplying residences, stores and factories, but even to 6-inch cast iron water mains and 6-inch "branch" pipes leading to fire hydrants.

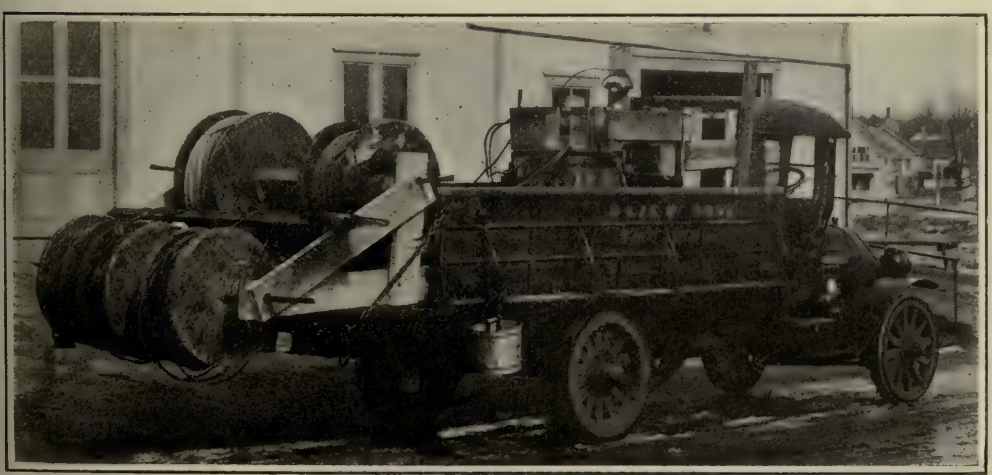
In the majority of cases where water could not be obtained thru the hydrant, it was found that the "branch" pipe leading from the main to the hydrant was frozen. But the main itself was clear on account of the circulation of water. Constant use by consumers, leakages, etc., kept it from freezing.

Equipment Employed

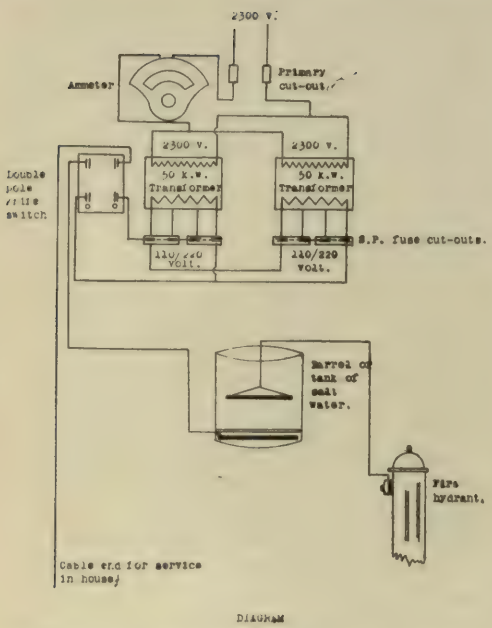
Accordingly, the Water Department equipped itself to thaw out any size pipe up to 8 inches, including 7-inch barrel hydrants. The illustration shows a 3-ton Velie truck with the following equipment: two 50-K.W., G. E. lighting transformers, 2,200-volt primary, and 110- and 220-volt secondary; an ammeter, G. E. make, 0 to 100-ampere reading, is located at the top of the transformer and connected on the 2,200-volt side of the circuit. On the front of the transformer, where the secondary or low-voltage cables are located, there are mounted four single-pole, 600-ampere fuse blocks, used for changing voltage from 110 to 220 or vice versa. The 110- and 220-volt wires are connected to these blocks. Instead of fuses, heavy copper bus bar blades are used. The changing of the bars to get the desired voltage is made while the current is shut off.

A large double-pole, single-throw knife switch, mounted at the top of the left transformer, as shown in the illustration, connects all low-voltage current to the cable running to the house and fire hydrant.

A current of 2,200 volts is carried to the transformers on the truck and connected to



VELIE TRUCK USED BY THE ELECTRIC LIGHT AND WATER DEPARTMENT OF NORTH ATTLEBORO, MASS., FOR THAWING FROZEN WATER SERVICES



DIAGRAM

METHOD OF WIRING EMPLOYED IN THAWING FROZEN PIPES, NORTH ATTLEBORO, MASS.

G. E. primary cut-outs, which are located on the opposite side of the truck, as shown in the view. No fuses are employed in any part of the equipment. Current to the extent of 100 amperes on the 2,200-volt side has been drawn thru the transformers.

One low-voltage cable is connected (see diagram) to a cast iron flange which is located in the bottom of an oil barrel, the barrel half filled with water containing 4 pounds of common table salt. The top cable coming out of the barrel is used to regulate the flow of current. On this cable is bolted another cast iron flange, 16 inches in diameter and 1 inch thick. This is lowered or raised by the operator while he observes the ammeter on the transformer, which indicates the amount of current in amperes. If he is thawing with 110-volt current, he simply multiplies the ammeter reading by 20, which will give him approximately the current on the secondary side of the circuit, which is the ratio of the transformer 2,200 to 110 volts, the current being practically in the same ratio; if the 220-volt is used, he multiplies by 10. By keeping the ratio of transformation in mind he can readily determine the flow of current he is using. The 110-volt current is used on short service, and the 220-volt on long service.

The two reels on top of the truck, as shown in the illustration, contain 1,500 feet of twin flexible, insulated, stranded cable. When customers with frozen services are beyond reach of the 2,200-volt primary circuits of the town's lighting system, then the twin conductor cable is laid on the ground to the truck.

The three bottom reels contain 1,200 feet of No. 00 stranded, weather-proof cable. One end of this cable is carried into the house and, to make a good connection, is wound around the pipe to be thawed. The other end of the cable is connected to the short cable coming from the double-pole switch. Two-bolt guy clamps are used in connecting the cables together.

The end of the cable coming out of the barrel is fastened under the cap of a fire hydrant, thereby completing the circuit thru the water main and the house service pipe. (See diagram.)

Pipe Resistance Varies

Great care must be taken with respect to the kind of pipe to be thawed; i. e., an old plain iron or galvanized pipe, because of the deteriorated condition of the threaded joints, unions and couplings, etc., cannot withstand the amount of current that a new pipe of a similar size will stand.

Lead service pipes of ¾-inch diameter require approximately 300 to 500 amperes of current, while the plain iron or galvanized or cement-lined iron requires from 150 to 400 amperes, depending upon the size and conditions. The time required to thaw such a pipe is 5 to 15 minutes, altho in some cases 20 minutes is required.

Six-inch cast iron water mains require 500 to 800 amperes, and in some instances 900 amperes. Six-inch and seven-inch barrel fire hydrants, of the ordinary 2-way or 3-way, 2½-inch nozzle type, require from 500 to 900 amperes.

Our crew consists of nine men stationed as follows: two on the truck operating the main switch and the cable in the barrel; one lineman, who connects all wires to the 2,200-volt lines; one hydrant man, who sees that the cable is properly secured under the cap on the nozzle and that a good contact is made; two men in the cellar to connect the cable to the pipe to be thawed, and also to inspect all piping as to joints, and to see whether the water pipes are lying on gas

ipes or come in contact with any other nderground structures; three men to pull ne cable and guard it when it is laid in the treet, and also to guard the high tension, ,200-volt cable. With this outfit we have hawed as many as thirty-two services in ne day, with an average of three con-umers to a "hitch." The frozen service ipes were not confined to any one particu-ir locality in the town. More services were ound frozen in coarse gravel and ledge nd rocky soil, where the frost penetrated o a depth of 6½ feet, than in hard pan and lay soil, where the frost penetrated only o a depth of 3 to 4 feet. The average cost, ncluding all charges, depreciation on cable, which runs high in such cases, was approxi-nately $6 per service.

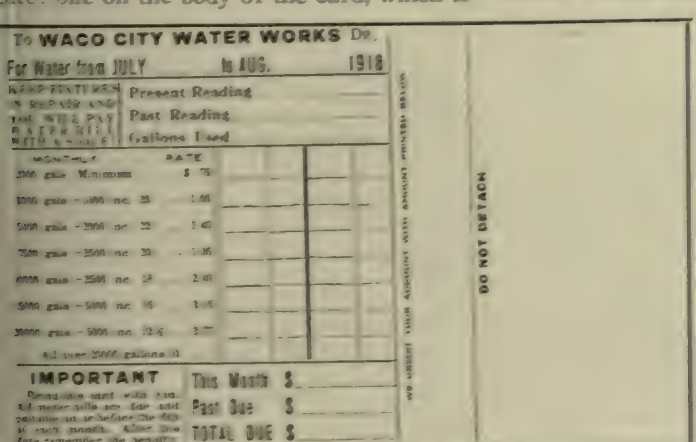
This electric thawing apparatus has been sed by the Water Department steadily ince 1912.

WILLIAM PLATTNER,
Manager, Electric Light and Water Department.

Postal Cards for Water Bills

WACO, TEX.—For some time the Waco City Water Works have been using postal card notices to all users of water having meter accounts. This postal card, shown in the accompanying cut, is mailed at the end of each month to the consumer, showing the number of gallons used and the total amount due. When the cards are returned by the consumer they are run thru a machine which cuts off the portion showing the date on which the account was paid, and bearing a number. This number is in duplicate: one on the body of the card, which is stamped "paid" and returned to the consumer; the other on the stub, which is held by the water-works. We have had splendid results from the use of this card, and, so far as we know, no objection has ever been raised as to the publicity given to individual accounts.

E. L. FULKERSON,
Secretary and General Manager, Water Works.


To WACO CITY WATER WORKS Dr.
For Water from JULY to AUG. 1918
Present Reading
Past Reading
Gallons Used
MONTHLY RATE
Minimum $ .75
IMPORTANT
This Month $
Past Due $
TOTAL DUE $
DO NOT DETACH

POSTAL CARD USED IN BILLING WATER CONSUMERS.
WACO, TEX.

COUNTY ENGINEERS

Keeping Montana Roads Open in Spite of Heavy Snows

KALISPEL, FLATHEAD COUNTY, MONT.—Last winter the heavy snowfall made motor-truck travel very difficult in all our cities, and over country roads in many places impossible. Because railroads were tied up for hours at a time, it was necessary to keep the roads open if interstate transportation was to be maintained.

All the Northern States suffered from these conditions, and Montana naturally among them. Here the increasing demand for roads both summer and winter has presented the county commissioners with a big problem. Inadequate train service has left an opening for the motor bus business, and Kalispel, Somers and Whitefish—in fact, all the Flathead County towns,—are now being served by capacious busses and by intercity trucking service. Owing to irregularity of the train service, school children travel to and from the county high school at Kalispel on the busses, and passengers from the belated lake boats are met daily at Somers and relieved of the old-time delay due to the lack of train connection.

The road commissioners have put the roads into excellent shape, materially reducing the cost for transportation of farm and factory products and making it possible for more of the country children to avail themselves of the benefit of the Kalispel High School.

However, these roads must be kept open the entire year if full benefit is to be received. The people have realized the value of the roads too keenly to allow them to be idle.

Snow Fences Employed

During last winter the commissioners set out snow fences to relieve the accumulation of snow that drifted, especially in some of the cuts. However, while helping with the drifts, they did not keep the road clear, and it was necessary for the County Commissioners to resort to snow plows. Plowing snow with horses costs between $5 and $6 a mile. It is very slow, and where the snow is deep, drifted and hard, considerable hand work is necessary.

The Kalispel business men raised $220 to assist in keeping the roads open, and the County Engineer proceeded to equip the county's 5-ton Federal truck with a snow plow. With the assistance of Warehouse Foreman J. H. Crittenden, the snow plow shown in the accompanying illustration was constructed. Much of the material was second-hand, and the cost was approximately $100.

Across the front end of the truck was bolted a heavy timber, to which the plow was hung with heavy double hinges. The plow was made after the type of railroad plows, out of heavy timbers, faced with "2 by 4's" and covered with sheet tin, while the cutting edge was faced with quarter-inch steel. A 6- by 6-inch timber is attached perpendicularly to the nose of the plow, and is connected by block and tackle to the rear of the truck, by means of which the elevation of the plow is regulated. By this adjustment the sleigh road is not damaged, but widened, and the superfluous snow is removed, thus permitting automobiles to get over the roads.

Spreader Boards

At the center of the truck on each side are attached spreader boards. Across the back is bolted a heavy timber, and braces extend to the spreader boards. These are hung in such a manner that they can be raised to avoid poles, fences or bridge railings, and are used to push back on each side of the road the ridge ordinarily left by the plow. The rear wheels of the truck are equipped with special steel cleats securely bolted to the wheels, and give the truck good traction. The front wheels are set in specially designed runners, shod with half-inch, quarter-round steel shoes. These run more easily than wheels, and hold the road while no difficulty is encountered in steer



FIVE-TON FEDERAL TRUCK OWNED BY FLATHEAD COUNTY, MONT., EQUIPPED WITH HOME-MADE SNOW PLOW, RUNNERS AND SPREADER BOARDS, AND USED WITH GREAT SUCCESS IN KEEPING ROADS OPEN UNDER ADVERSE CONDITIONS

ng. The plow itself weighs between seven and eight hundred pounds. Gasoline, oil, tools and camp outfits are carried in the body, which, with plow and equipment, would make the outfit weigh about six tons.

On its first trip the truck proved its efficiency beyond all expectation. It opened the road to Whitefish on this trip, later cleaning up the Big Fork and the Somers road. The truck was in service all last winter. With a crew of five men, 84 miles of road averaging 18 inches of snow were cleaned at a total cost of $110.75, or 88 cents per mile per foot of snow.

A. L. SAUNDERS,
County Surveyor and Engineer.

Application for Poolroom---Bowling Alley License

Full Name of Applicant.....

Location of Business.....

Citizen of the United States?.....

(a) By birth.....Date.....

Place.....

(b) By Naturalization.....Date.....

Place.....

Has applicant been previously licensed to operate a poolroom or bowling alley?.....

Has such license ever been revoked?.....

Date .....Signature .....

Present Address.....

(Read carefully directions on other side of card). (over)

FORM OF LICENSE APPLICATION EMPLOYED BY DEPARTMENT OF PUBLIC SAFETY, TOLEDO, OHIO



SHOWING OPERATION OF THE SPREADER BOARDS ON THE SNOW PLOW

PUBLIC SAFETY - DEPARTMENTS

Effective Control of Pool-Rooms and Bowling-Alleys

TOLEDO, OHIO.—On July 8, 1918, the Toledo City Council passed an ordinance regulating pool-rooms and bowling-alleys, which became effective August 7.

Under its provisions:

1. Applicant must be a citizen of the United States.
2. He must be over 21 years of age.
3. He must secure a license from the Director of Finance, for which he must pay a fee of $5 per year for the first pool-table or bowling-alley, and $1 for each additional table or alley.
4. No minor under 18 years of age may enter a pool- or billiard-room, or use any pool- or billiard-table there. Both the minor and the manager of the pool-room are subject to a fine for violation of this law.
5. All pool-rooms and bowling-alleys must be closed between the hours of twelve midnight and six A. M.
6. Gambling must not be permitted.
7. No card games must be permitted.
8. No morphine or other similar drugs may be sold or given away in any pool-room.
9. Clean and sanitary conditions must be maintained.

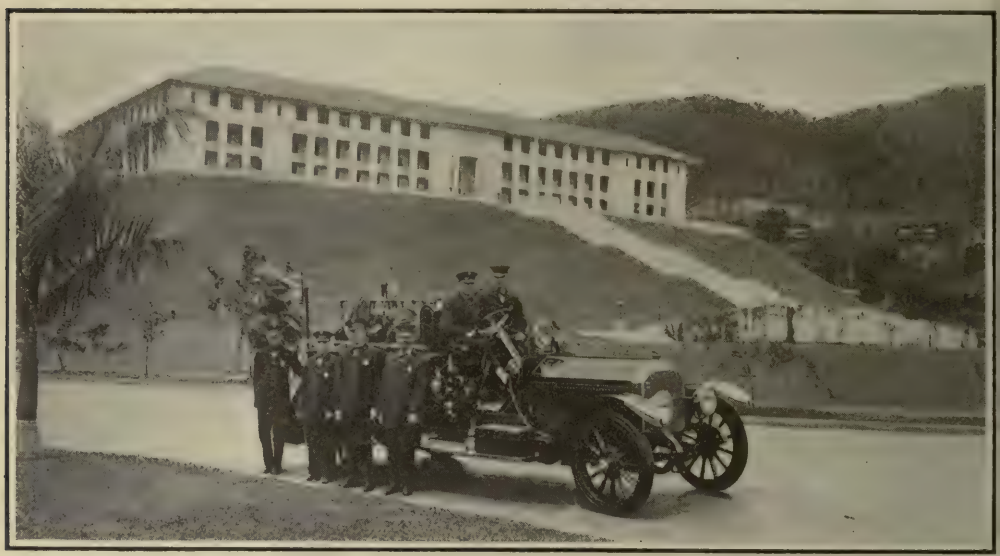
It was on the recommendation of the Department of Public Safety that the Council of the city of Toledo passed this ordinance as a measure to reduce juvenile crime in the city, and a help in eliminating some of the places where older criminals congregate.

The application card shown herewith is filled out by the applicant and is then turned over to the Police Department for investigation. When it is found that the applicant's reputation is good, his application card is O K'd by the Chief of Police, after which the applicant takes it to the Director of Public Safety and receives a certificate of approval. This he takes to the office of the Director of Finance, where the license is issued and the payment is made. Sometimes, when the applicant's reputation does not measure up to the standard, his license is issued to him on probation; in other cases similar licenses are sometimes refused.

This ordinance is being strictly enforced and is producing very good results.

CHRIS F. WALL,
Director of Public Safety.

The Useful Motor Truck at Home and Abroad



AMERICAN-LA FRANCE PUMPING AND HOSE CAR USED FOR THE FIRE PROTECTION OF BALBOA, CANAL ZONE



WHITE 3-TON TRUCK USED AS A TRENCH SCAVENGER IN FRANCE



CHAMPION SNOW PLOW ATTACHED TO A PIERCE ARROW TRUCK, USED BY THE CITY OF BUFFALO, N. Y.



GARFORD TRUCK FITTED WITH SNOW PLOW FOR USE BY NEW YORK CITY STREET CLEANING DEPARTMENT

Civic Work of Educational Institutions

Readjustment of the School from the Viewpoint of a Manufacturer*

By James P. Munroe
Vice-Chairman, Federal Board of Vocational Education

ONE of the most important of the lessons which our country is learning is that, as a nation and as individuals, we have been wasters and that this waste, from now on, must cease. To no one more vividly than to the manufacturer has this fact of scandalous waste been shown. He is realizing for the first time in his life that manufacturing is not merely the buying and fabricating of raw materials; that merchandizing is not a simple question of buyers and salesmen; that the bringing and sending of goods is not just the telephoning of an order to the railroad; that the question of markets is not solved when he has beaten some particular rival; and that the labor question involves many things beyond the hiring and firing of such casual labor as may happen to come to the mill door.

This being the chastened condition of the manufacturer's mind, it would seem, as it is, an admirable time in which to place before him the fact that all these and many other problems lead back for solution to the question of right education. If the manufacturer himself, if his customers, if those who supply him with materials, transport his goods, and handle his labor problems had all been generally trained in economics and specifically trained in the jobs they have to do, they would understand that all the questions of coal and railways and markets and labor are tied up with one another, and that, if one is to make a real success in industry, he must make a study of these fundamental things.

When the leaders in industry get really aroused to the fact that success or failure in any particular industry, or in the commerce and manufacturing of a region, or in the development of the country as a whole, is largely a question of right education, they will demand that the schools be made over to meet the existing economic and social situation, that those responsible for the schools shall make themselves thoroly familiar with that economic and social field, and that there shall be provided from the common funds revenues adequate to carry forward education in a manner consonant with the genuine needs of modern, civilized society.

I do not in the least mean that the manufacturers are going to demand that the schools shall train boys and girls solely or specifically for manufacturing. On the contrary, when those industrial leaders really understand the relation of schooling to industry, they will call for an educational plan much broader than we have, a system that will give the boys and girls of the coming generation initiative, mental flexibility, ambition, that will fill them with ideas concerning the interdependence of industry, labor, transportation, legislation, citizenship and daily life, concerning the prevention of material and human wastes, concerning their duties as members of a civilized society, that none of the earlier generations has had, in its rank and file, any sort of opportunity to secure.

What Would the Manufacturer Demand of Education?

The first thing that a manufacturer would do with education, if he had the power, would be to make it *real, immediate,* and

* From an address before the Section on Higher Education, of the National Education Association.

interesting, to the growing child and youth. The schoolmaster has a great deal to say about the doctrine of interest, about apperception and all that sort of thing; but in most schools there is neither any atmosphere of interest nor any genuine connection between the school tasks and the child's apperceptive experience. It is only for a very short time that the school can hold the child at all; and from the point of view of a business man it is the wickedest waste that this short time should not be made as fruitful as is possible. And common sense teaches that the only way in which to render it fruitful is to make the school period interesting, to see that its subject-matter is comprehensible and to place before the child, as far as possible, a visible and understandable aim for the work that he is told to do. Make it interesting, simple and with a definite objective, and there is almost no limit to the amount of work that one can get out of even the commonplace child; and that work will be secured with far less mental and physical fatigue, on the part of both pupil and teacher, than under the methods that now hold in most of our public and private schools.

The next thing that the manufacturer would bring about in education, if he could, is to make it *businesslike.* The most important period in a human life, so far as future character, happiness and success are concerned, is the school years, including at least those of the secondary school. Yet that most vital time is usually treated as if it were of little consequence, as if it were not until the period following school that the really serious business of human life begins, whereas, anyone who has had anything to do with childhood and youth knows that unless the physical, mental and moral character is firmly established before the eighteenth year, there is almost no hope of doing anything thereafter. Consequently, education should be treated as a business: the business of establishing health, mentality and character, and should be subject, therefore, to the rules and methods of business, adapted, of course, to the age of the person concerned and to the special nature of the business that is being carried on. The essential thing is that the child, the parent, the teacher and the citizen in general—all should realize and should act in accordance with this realization, that in the period between five and sixteen, eighteen, or twenty-one years of age, as the case may be, all of them ought to attend industriously, earnestly and with full understanding of what they are undertaking, to the business of making each particular child concerned into the best citizen, physically, mentally and morally, that he is capable of becoming.

A third thing that the manufacturer would bring about, if he could, is *an understanding on the part of the pupil in school of what his future responsibilities are almost certain to be.* It is perfectly plain to you and me, it should be made equally plain to the boy, that he has an important part to play in the coming generation, that it is his business in the childhood and adolescent years to prepare himself for that part, and that his duties range themselves under three main heads: (1) the duty of earning as good a living as he possibly can, so that he may make due return for all that the community, during his unproductive years, has done for him; (2) the duty of establishing himself as a real part of society by marrying and bringing up a family; and (3) the duty of taking his full share in those common responsibilities for the welfare of the community as a whole which we lump under the general term of citizenship.

It is for these three things that, in the main, the education of the child is carried forward; it is because we believe these ends worthy and desirable that most American communities appropriate a large part of their revenues to public education; yet, when it comes to using the money so appropriated, most cities and towns lose sight almost entirely of what that money is intended for and spend it upon a kind of so-called education that in many cases has only a very remote bearing indeed upon *vocational competence, sound family life* or *intelligent citizenship.*

A fourth thing that manufacturers are beginning to ask is *why the schools keep themselves so much apart from the other educative forces of the community;* why they do not coöperate with the parents, the industries, the civic life in general, using them as aids, as laboratories, as co-teachers, in the upbringing of boys and girls. The schools maintain, of course, that coöperation should come from the other side, and

that the school, as an agent of the community, cannot take such initiative. As a manufacturer who is somewhat familiar also with school conditions, I am convinced that the initiative must come from the school side, and that it is a legitimate duty of the schools to educate the parents, the industries and the community in general as to what they can do and ought to do to help in this most important of all social duties—the preparation of boys and girls for an effective adult life.

How Can the School and Industry Coöperate?

There are several ways in which the school and industry, whether that be manufacturing, commerce or agriculture, can get together for mutual and immeasurably important help. The school can use the factory, the farm, the office or the store as a laboratory in which, under proper supervision and safeguards, the boys and girls may get that acquaintance with real things which it is impossible to give in the schools. Impossible, first, because the air of reality is lacking in the school, and, secondly, because no community can afford to fit up in its school buildings those complete industrial and commercial plants, or to surround the school buildings with that extent and variety of agriculture which, in most communities, are to be found, within a reasonable distance of the school buildings, in the factories, stores and farms which are themselves the economic heart of the community.

Another way in which the school and industry can coöperate is by using the former as an adjunct to the factory, the store and the farm, opening its facilities, both day and night, to those boys and girls, men and women, who have had to go to work at an early age, or who for one reason or another have been denied proper schooling, or who, their ambition roused as they get into the thick of earning a living, desire systematic training for higher economic service.

A third way in which the school and industry can coöperate is by definitely dividing the work of educating the boy or girl during certain adolescent years, the pupil spending half his time in school and half his time in remunerative industry, the so-called practical work in the shop, store or farm being illuminated by the theory taught in the school, and the theoretical studies of the school being given life and meaning by the practical work of industry.

The machinery by which these several types of coöperation are to be brought about is that of the evening school, the part-time continuation school and the co-operative day school. In the first will be cared for, mainly, those older men and women who are employed thruout the day and who can receive instruction, therefore only in the evening hours; in the second will be served, chiefly, those youth between the ages of fourteen and eighteen whose schooling is so defective as seriously to interfere with their economic and social progress; while the third will cover the cases of those thousands of ambitious youth who, unable to afford the loss of time involved in securing a higher education, can by working and earning half the time, so far support themselves as to be able to devote the remaining half of their working time to systematic study.

A fourth way in which the industries can be of service to the schools is in connection with the all-day vocational school wherein the boy is deliberately preparing himself for a specific vocation. The teaching in such a school is the more effective the more it utilizes the factories, the stores and the farms of its vicinity as laboratories in which the pupils are permitted to get the main part of their practical experience.

The manufacturer has no anxiety as to the readjustment of our public and private schools to meet those exigencies which the war has so keenly brought home to us, provided education in the United States continues, as it has so well begun, to develop sound vocational education in its schools and colleges. The so-called academic studies will remain only after they have proved their right to live by reshaping themselves to meet the true needs of modern life, and the schools as a whole will get more and more awake to the fact that they are supported by the public, not to fit boys into an ironclad system, but to fit a very varied and flexible system into the actual needs of individual boys.

The Operation of the Smith-Hughes Law

This general awakening is being helped to an unexpected degree by the working of the so-called Smith-Hughes Law for the

promotion of vocational education. Under that law every state in the Union has created a State Board for Vocational Education, and, in increasing amounts, the Federal Government stands ready to subsidize the teaching and supervision of secondary training in agriculture, the teaching of boys and girls over fourteen in the trades and industries and in home economics, and the preparing of teachers along these three general avenues. To the manufacturer it is of great interest that at least one-third of the money appropriated by the state and matched by the Federal Government for the training in trades and industries must be used for part-time instruction. This provision emphasizes the interest of the Government in strengthening education at one of its weakest points. That point is the lack of educational supervision of the boy and girl between fourteen, when, in most cases, he can leave, and does leave, school, and sixteen, seventeen or eighteen, when he arrives at the age for beginning really productive work.

During those intermediate years, unimportant from the point of view of industry, but perhaps more important than any others from the point of view of psychology, morale and education in general, part-time schooling permits of the school's keeping hold upon the youth, advising and training him with a view to his effective future, and supplementing his remunerative employment with studies that will improve his outlook upon life, give meaning to his daily work, and strengthen character at the very moment when it most needs wise support. The part-time continuation school, thus fostered by the Smith-Hughes Law, has educational possibilities, I believe, beyond our present conception; but it cannot be made really effective until the states pass, as they should, compulsory laws requiring school attendance, between fourteen and sixteen, for all youth—for the entire session if they are not at work, and for at least eight hours a week, out of their working time, if they are regularly employed.

Another form of education which the Smith-Hughes Law permits and encourages is the formation of evening classes for men and women at least eighteen years old, in subjects supplementary to their day employment. This gives new and added opportunities for those ambitious workmen who desire to fit themselves, as modern industry makes it so difficult for them to do within the industry itself, for those higher positions which are the first rungs on the ladder of industrial competence.

Federal Taxation of Municipal Bonds

To the Editor of The American City:

In your October number you publish an editorial entitled "A Dog-in-the-Manger Tax." It is reprinted from *The Sun* of September 19, and appears to meet the approval of The American City. There is an editorial note quoting Ford H. MacGregor, Chief of the Reference Bureau of the University of Wisconsin. Mr. MacGregor says there is absolutely no question but that a Federal tax on the income from municipal bonds would be unconstitutional. His conclusion may be right. He differs from very eminent lawyers. I think no one is wise enough to predict what the Supreme Court would do with such a case. I am inclined to think that under the existing conditions the Supreme Court might uphold the constitutionality of such a tax. Be that as it may, the editorial deals with the subject on the merits and contains what I think are several fallacies.

It must be obvious that a tax imposed on the income of outstanding state and municipal bonds can have no influence whatever on the finances of the cities which have issued such bonds. State debts are relatively small compared with city debts. The aggregate funded debt of all cities having a population of over 30,000 is $3,243,000,000. The aggregate funded debt of the states on June 30, 1913, was $403,000,000. The only debt that could be affected by such a tax would be the debt hereafter incurred. In so far as the tax were imposed on short-term obligations, the effect would be negligible. The only serious effect would be upon long-term obligations hereafter issued. The total funded and floating debt for which debt obligations were issued during the year

1917 was $354,000,000. Part of this may well have been issued for short periods.

The editorial, in effect, says that such a tax will "cost the local governments and communities billions of dollars." It cannot cost local governments more than the difference in the interest rate which they would be obliged to pay if the tax were imposed and the interest rate they would pay if the tax were not imposed. Suppose that difference were 1 per cent; the added expense on one year's issue would be $3,500,000 for all the cities of the United States. It would cost this sum annually for the life of those particular bonds, which might be issued for shorter terms under these conditions than would otherwise be the case.

Perhaps we may measure the cost by the difference between the rates of interest which the 3½ per cent Liberty Bonds yield to investors and the 4¼ per cent bonds yield to investors. That difference is less than 1 per cent. Even if the difference should be 2 per cent, the amount is trivial compared with the amount alleged by the editorial.

The editorial says, in effect, that "investors will not pay the taxes; the state and municipality will pay them." If the tax were not a graduated tax I admit that the statement would be correct. When a tax is graduated, the interest rate is probably raised somewhat more than the normal tax, but very much less than the highest surtax. This point surely needs no argument.

I can see no possible reason, aside from the constitutional difficulty, for making state and municipal bonds a preferred investment as compared with any other bonds, public or private. The holders should pay their income taxes all alike. The interest rate takes care of equality. If a person buys a 4 per cent state bond because of its safety, his interest is only $40 per thousand and he pays an income tax in proportion to his income. If he buys an industrial bond paying 7 per cent, his income is $70 and he pays in proportion.

Lawson Purdy.

New York City,
October 25, 1918.

Editorial Note:—As president of the National Municipal League, and former president of the Department of Taxes and Assessments in New York City, Mr. Purdy's opinion on subjects of taxation deserves most careful consideration by readers of The American City. We regret that in the editorial under discussion, the New York *Sun* used the phrase "billions of dollars" where "hundreds of millions" would probably have been correct; but it would appear also that Mr. Purdy in his own figuring has not had the full facts before him.

Mr. Purdy bases his calculations on the Government report of debt obligations incurred during 1917 by cities of over 30,000 population; and taking 1 per cent of the amount he states that the added expenses on one year's issue would be $3,500,000 "for all the cities of the United States." The fact is, of course that there are only 219 cities in the group covered by the census report, and that these represent somewhat less than one-third of the population of the United States. There is no accurate compilation of the other figures in existence, but it would probably be conservative to assume that the total annual bond issues of all the states, counties, townships and the 12,000 smaller municipalities are at least as great in the aggregate as those of the 219 major cities. The added interest expense on one year's issue would then be $7,000,000 *per annum* instead of $3,500,000; and assuming an average term of only ten years for the bonds the added expense to the local governments on one year's issue during the life of the bonds would be $70,000,000. The calculation should not be based on a single year's issue, however for the principle of Federal taxation on state and municipal bonds, once established, would doubtless become a fixed policy. The enormous debts incurred by the Federal Government during the war will certainly require the taxation of incomes at a high rate for many years to come. No time limit was set for the "billions of dollars" of cost to local governments and communities in the *Sun* editorial; but if we look forward only ten years to a similar burden of Federal taxation, and assume as before an average of ten years as the life of all bonds issued under this handicap, our $70,000,000 becomes $700,000,000 of additional interest which will have been paid before the bonds are redeemed. The figures would be even larger if we assume a probable increase in state and municipal bond issues during the next few years over the figures for 1917 on which this calculation is based.

As to the wisdom of Federal taxation of state and municipal bonds—that is, of securing revenue from the people indirectly, thru their local governments, for the support of the Federal Government—there is room for difference of opinion; but The American City believes that no unnecessary handicaps should be put in the path of state, county and municipal public works during the period of after-war readjustment. The constitutionality of the proposed taxation is a moot question also, and one on which eminent lawyers disagree. But Congress seems likely to take the advice of those who agree with the New York *Sun*, for the Finance Committee of the Senate has eliminated entirely from the revenue bill the section under discussion.

Municipal Salaries and War-Time Living Costs

IN few cities, apparently, have salaries of municipal employes and department heads been adjusted to meet the war-time changes in the cost of living. That necessary family expenditures have increased considerably during the war is a matter of common knowledge that no one has been able to escape, but the extent of the increase is perhaps not generally realized. Taking into consideration all of the factors in the problem, the evidence points strongly to the conclusion that for the great majority of American communities the average increase in the cost of living between July, 1914, and June, 1918, lies between 50 and 55 per cent. This estimate is based on Research Report No. 9, recently published by the National Industrial Conference Board, from which the following table is taken:

INCREASE IN COST OF LIVING IN REPRESENTATIVE AMERICAN COMMUNITIES, JULY, 1914-JUNE, 1918

Budget Item	Distribution of Family Expenditure	Increase in Cost During War Period to June, 1918	Increase as Related to Total Budget
	Per Cent	Per Cent	Per Cent
All items...	100.0		52.3
Food	43.1	62	26.7
Rent	17.7	15	2.7
Clothing	13.2	77	10.2
Fuel and light...	5.6	45	2.5
Sundries	20.4	50	10.2

Fortunately, municipal strikes are as yet uncommon, yet they indicate a dissatisfaction with which we soon must deal. In that period designated by the politicians as the "good old times," popular opinion pictured the average city employe as overpaid and underworked. With the growing demand on our municipalities for war work of all kinds, the exact reverse is becoming more and more the order of the day. Overwork and underpay breed dissatisfaction, and bring about a poor work and a labor turnover that seriously handicaps our municipalities. As straws show which way the wind blows, the following items, compiled by THE AMERICAN CITY from correspondence and the daily press, may be of interest to budget-making bodies:

Albany, N. Y.—Forty water-works employes, including laborers, calkers and meter inspectors, recently struck to enforce a demand for higher wages to meet the increased cost of living. The Board of Estimate promptly raised the wages, and the men returned to work.

Attleboro, Mass.—The pay of policemen and firemen was recently raised, the rates now being as follows: $3 per day for the first six months; $3.25 per day for the second six months; $3.50 for the second and following years. Captains and electricians of the Fire Department get $4 per day. Special policemen are paid at the rate of 33⅓ cents per hour.

Boston, Mass.—The sudden strike of the Boston firemen, settled by Mayor Peters with the promise that he would do his best in the framing of the next budget to see that they got advances sufficient to enable them to make both ends meet, has brought about demands from other city workers of all classes that may total over one million dollars' increase annually.

Chicago, Ill.—Salaries in some of the engineering departments have not been raised in twenty years. In consequence, difficulties in keeping technical staffs are increasing, according to a report from one of the city engineers.

Battle Creek, Mich.—From W. W. Bridgen, Superintendent and Engineer of the Department of Public Works, comes a report that practically all city officials have received increases in salaries within the last year amounting to from $100 to $500 dollars per year.

Cleveland and Cuyahoga County, Ohio.—From Robert Hoffman, Commissioner of Public Service of Cleveland, and from W. A. Stinchcomb, County Engineer, come the most complete statements of increases in municipal salaries. Mr. Hoffman says salaries and wages have been adjusted and increased somewhat to meet the changed conditions. It has not been possible, however, to adjust them so that they compare with salaries paid by others than municipalities and with the changed conditions under which we are living. However, there has been a willingness shown by those directing the city finances to recognize these changed conditions and to adjust the salaries whenever possible, even tho the limitations imposed by the income upon which the city must base its expenses, are such as to make adequate pay for services rendered practically impossible. Mr. Stinchcomb writes:

"In 1917, after Cuyahoga County became engaged in the war, there were two general advances in salaries thruout the department. These were based upon an attempt to adjust the wages to the cost of living, but had no scientific basis. Beginning with the first of January of this year, there was installed a bonus system benefiting all employes on a monthly basis. Under this the base salary was calculated as being appropriate to the conditions existing in January, 1917, with the bonus figured from that time on, conditioned upon the advance in the cost of living. In other words, we attempted to equalize the purchasing power of the dollar, in the meeting of living expenses by the persons working in the department. Thru a questionnaire we learned the average percentage paid by our employes for food,

clothing, fuel and light, rent, miscellaneous and savings. For the purpose of more justly proportioning the increase, the employes were divided into three classes: A, those whose salaries amount to less than $1,600 annually; B, those between $1,600 and $2,400; and C, those above $2,400.

"By the use of commodity prices compiled monthly and by statistics collected thru the Real Estate Board with reference to rent, the bonus is determined for the three classes of employes each month.

TABLE I.—PERCENTAGE DISTRIBUTION OF LIVING EXPENSES AND SAVINGS FOR THREE CLASSES OF SALARIES

	Class A Less than $1,600	Class B $1,600 to $2,400	Class C Above $2,400
	Per Cent	Per Cent	Per Cent
Food	38	37	24
Clothing and shoes	15	14	12
Fuel and light	5	6	3
Rent	21	21	14
Miscellaneous	13	12	27
Savings	8	10	20

TABLE II.—CLEVELAND COMMODITY PRICES IN 1918 COMPARED WITH JANUARY 1, 1917, AS BASE; AND "H. C. L." SALARY INDEX

	Jan., 1918	Feb., 1918	March, 1918	April, 1918
Food	1.334	1.36	1.33	1.33
Clothing and shoes	1.22	1.225	1.244	1.294
Gas and electricity	1.00	1.00	1.000	1.000
Coal	0.834	0.835	0.833	0.825
Rent	1.125	1.125	1.125	1.125
Miscellaneous	.....	1.19	1.185	1.184

"H. C. L." Salary Index, Percentages

	Class A	Class B	Class C
February, 1918	21.7	21.2	17.9
March, 1918	20.9	20.0	17.5
April, 1918	21.66	20.71	18.08

"In Table I is shown the percentage distribution of living expenses; in Table II the commodity prices in January, February, March and April, 1918. The bonuses paid in August, 1918, were: Class A, 23.67 per cent; Class B, 22.76 per cent; Class C, 19.68 per cent, all figured on the monthly basis as appropriate for January, 1917. These are paid in addition to base pay."

Kemerer, Wyo.—An engineer who has just finished an extensive survey reports that bartenders in western Wyoming receive $130 per month, teamsters $4 per day, common laborers $4 per day, men working in the hay field $4 per day and board, sheep-herders $100 per month and board, coal miners from $175 to $275 per month. He adds: "Compare these wages with those offered for engineering services, including positions in technical schools and colleges and in municipal employ."

Lorain, Ohio.—On September 23 the Common Council granted to members of the Water-Works Department an increase in salary ranging from 15 to 20 per cent. Similar increases were promised to the members of the Fire Department.

New York, N. Y.—The Board of Estimate received from the Committee on Financial Budget a recommendation that every employe earning less than $1,800 per year should receive a war bonus of $100 per year. About 30,000 employes will be affected. A few days prior to this the Board had adopted a resolution increasing the pay of first-grade firemen and policemen from $1,500 to $1,650 per year. These increases to police and firemen total about $1,800,000, those to other employes about $2,500,000, or a total of about $4,300,000 over the salary appropriations for last year. These increases were not for satisfactory services but primarily to aid city employes in meeting the increased cost of living.

St. Louis, Mo.—An ordinance fixing the base pay for all municipal employes has this saving section: "Whenever on account of a temporary scarcity of employes it becomes impossible to fill vacancies at the initial compensation established, the Board may authorize the payment of a higher compensation in order to fill the vacancies for a limited period to be designated."

Sydney, Australia, reports a special appropriation of £38,000 to increase municipal salaries to meet the high cost of living.

Woonsocket, R. I., has granted a raise of 12½ per cent to the permanent men of the Fire Department, and $75 more per year than formerly to the call men.

Wauwatosa, Wis.—Mayor A. Koenig reports the introduction of a resolution petitioning the State Legislature to enact such laws as would ratify any action that might have been taken by various municipalities with reference to salary increases made in conflict with existing laws.

Zanesville, Ohio.—The City Council recently passed an ordinance reducing the number of firemen in order to increase their pay. Under the new schedule the chief will receive $1,800, the assistant chief $1,500, and the firemen $1,300 per year.

Wisconsin Municipal Reference Bulletin No. 5, published by the Extension Division of the University of Wisconsin, shows some of the amazing differences in salaries paid by cities of approximately the same size in that state.

The public are pretty well informed on the subject of the high cost of living. They can hardly plead ignorance if their officials recognize the wisdom and justice of providing municipal employes with additional funds to meet the present emergency. Nowhere more than in modern municipalities is it true that "a laborer is worthy of his hire." And the "laborer" should include not merely hand-workers but brain-workers as well—such important heads of departments, for example, as city engineers, water-works superintendents, fire chiefs, health officers, city clerks, school superintendents and principals. Shall we continue to force our trained municipal employes and department heads to seek their living elsewhere?

News and Ideas for Commercial and Civic Organizations

Rockford to be Replanned

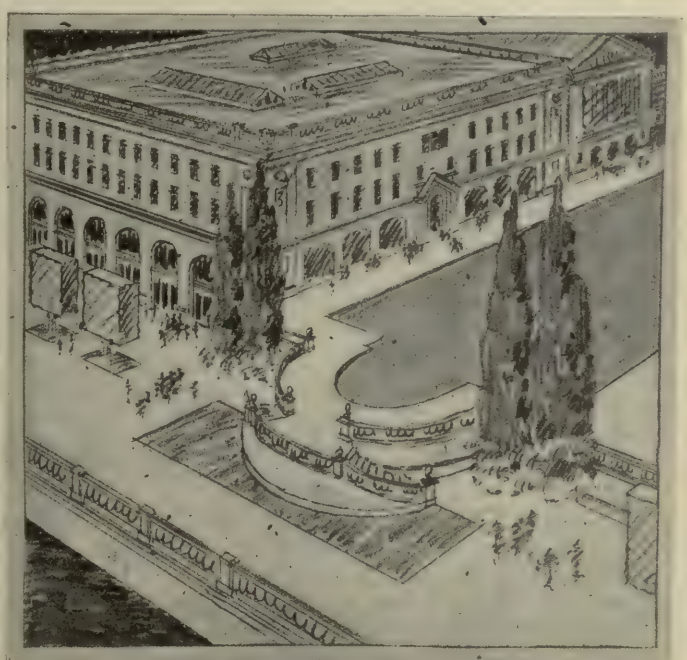
Rockford, Ill.—The replanning of Rockford is to be undertaken in the near future. Myron Howard West, President of the American Park Builders of Chicago, has worked out a comprehensive scheme for the improvement and extension of the city, which is carefully explained in his recently published report to the Rockford City Plan Commission. The report contains Mr. West's recommendations for the general development of Rockford from a structural standpoint, and numerous graphic maps, charts and sketches help to visualize the recommendations.

The initial steps in the movement to replan Rockford were taken in April, 1915, when Adam Schwindt, at that time president of the Rockford Chamber of Commerce, who appointed a special committee of the citizens to investigate the feasibility of making over the city to more nearly meet the needs of the increasing population. This committee became the Rockford City Plan Commission; George D. Roper is its chairman. Under Mr. Roper's inspiring leadership, the Commission devoted itself to its task with enthusiasm in spite of the anxieties incident to the great war and of any other public interests. After months of earnest study, the Commission called Mr. West in consultation. So impressed were all the members of the Commission with the comprehensive plan presented, that the executive committee was authorized to enter into contract with the American Park Builders for the services of Mr. West. The plan was submitted in its final form on February 28, 1918, and was unanimously adopted on March 2, 1918.

In drawing the plan, the growth for a half-century has been anticipated. Some of the features must therefore await that growth; many of them, however, may be realized without undue delay.

In his letter of transmittal, Mr. West states:

"We realize that this report is being submitted at a time when the thoughts and energy of the nation are centered on the great war and that there is, therefore, hesitancy in undertaking projects which may be deferred. In this connection, however, it is well to consider that the very foundations of city planning are conservation and efficiency. No more opportune time will ever exist to apply these



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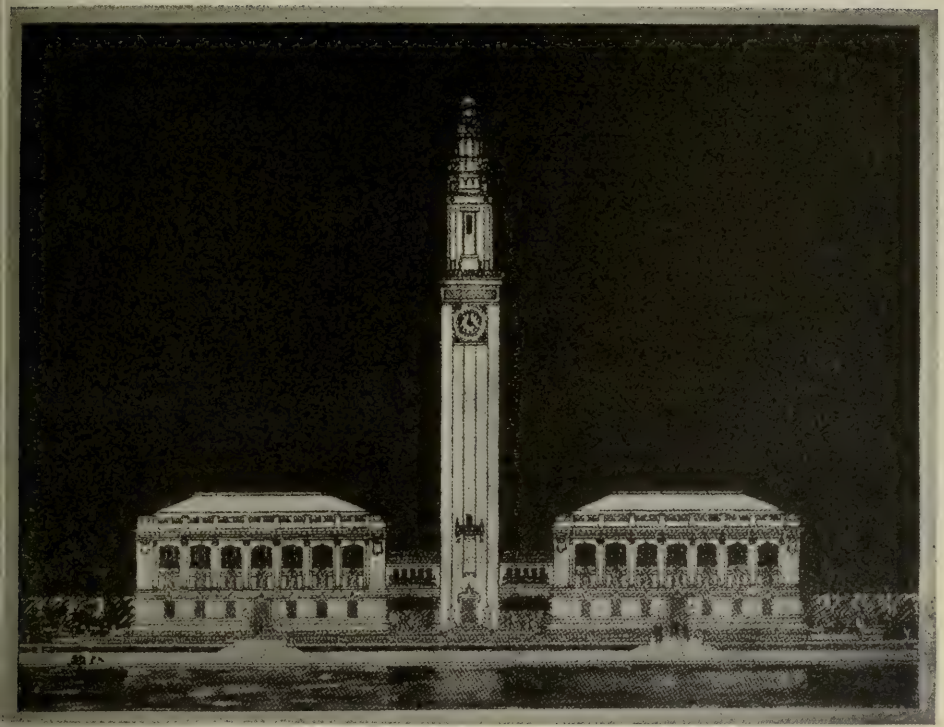
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STUDY FOR PROPOSED CITY HALL, ROCKFORD, ILL.

city building. While, therefore, we do not commend that all the projects of this plan undertaken at this time, we would urge on you an immediate putting into effect of ose suggestions having to do with control, pecially in connection with the city's future owth, that the city may at once begin to ve money and to insure itself against the plication of past mistakes."

The object and scope of the plan include: rearrangement of the streets; improving e steam railroad system, the system of erurban lines and the system of local ctric lines; the zoning of all buildings; uniform distribution of the park units, ving in mind the growth of the popula-n, convenient sites for future schools d neighborhood centers, etc.; the ar-ngement of public building sites so that new structures are needed they may be placed and built as to form a dignified d beautiful group conveniently located d provided with attractive approaches d settings.

Among the other aspects of the subject relt upon in the report are that of grade-ossing elimination; the establishment of blic comfort stations; tree planting and the ornamentation of streets; the establishment of a central warehouse district and freight terminal; and the improvement of the river front. The plan is rounded out by a scheme for the arrangement of the public buildings into a beautiful civic center.

The report is concluded with suggestions of ways in which the proposed plan may be put into execution.

Chamber of Commerce Reading Clubs

MIDDLETOWN, N. Y.—The Middletown Chamber of Commerce is endeavoring to keep its members informed in regard to the activities of other commercial organizations thru the various house organs that reach the Secretary's desk. With that object in mind, the Secretary has organized three reading clubs, consisting of fifteen members each, within the Chamber. About a dozen different pieces of printed matter are placed in a large envelope, and any other material which comes to the office that it is thought



BEHIND THE TIMES OR UP TO DATE? WHICH DO YOU CHOOSE TO BE

Above is the old way of cleaning catch basins by hand, which is filthy, costly an conducive to spreading disease and pestilence.

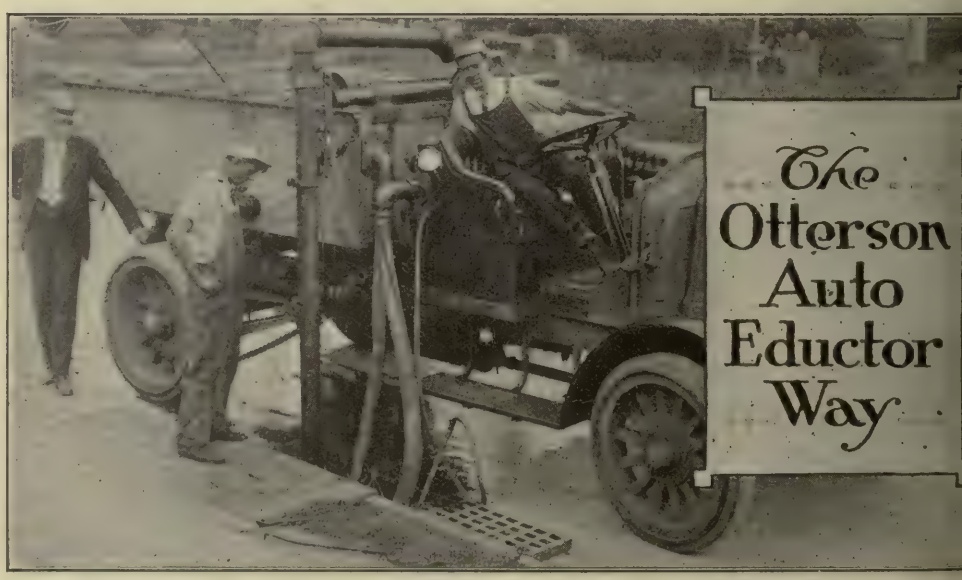
And below is the up to date way—the Otterson method, sanitary, efficient an economical with no menace to public health. How is it done? By means of th Otterson Auto-Eductor, which conserves time, labor, health and money for ever municipality which uses it.

If CONSERVATION is the watchword in your city you ought to send us you address so we can send facts and figures showing the savings which the Auto Eductor has made for other cities.

EQUIPMENT MOUNTED ON ANY 5-TON CHASSIS OF SUITABLE STANDARD MAK

THE OTTERSON AUTO-EDUCTOR COMPANY

817 Fairbanks Building **Springfield, Ohi**



esirable to have the members digest. A py of THE AMERICAN CITY is always in- uded. Pasted on the outside of the en- elope is a typewritten sheet setting forth e purposes of the reading club, giving the mes of the members of that particular ub, and instructions to the recipient to ep the envelope for three or four days and en pass it on to the man whose name ap- ars next on the typewritten list.

It is the Secretary's intention to organize ough clubs to take in the entire member- ip. The results are already apparent, and e members appear to be much pleased ith the idea.

G. D. THELEEN,
Commissioner, Middletown Chamber of Commerce.

A Patriotic Home-Building Movement

SEATTLE, WASH.—The only obstacle to c filling of $200,000,000 worth of war ntracts in Seattle was the need of homes r the additional war workers required. he More Homes Bureau of the Seattle amber of Commerce therefore came into ing, and it has been able to solve the prob- m. The city had pledged the Government rly this year that it would have 5,000 re homes ready for the war workers by nuary 1, 1919. In a five-days' campaign, nich closed on September 7, a corps of o solicitors, organized from the member- ip of the Chamber of Commerce to call on prospective builders, had secured dges for the erection of 3,662 new homes tween that time and January 1. This, th the number of homes already in pro- ss of construction, enables the city to re than make good its pledge.

The solicitors worked on an indexed list prospects every morning during the ek of the campaign, and were unremit- g in their efforts to persuade every pros- ct to erect one or more houses. Noon etings were held in the Arena, at which ogress reports were submitted. Tele- ams from the Government congratulating leaders on the progress of the work re read, and these, with the patriotic ad- esses that were delivered, gave great im- tus to the movement.

Many forms of publicity were employed an attempt to center the interest of the izens on the work. Great numbers of ople called at the headquarters of the bureau to obtain information about the pro- ject, and were furnished with complete data regarding the building of various styles of houses.

One of the first important things under- taken by the bureau was the organization of a body of public-spirited citizens into a loan company to provide money for builders on second mortgages. About 500 homes which could not otherwise have been built will be provided thru this means. An ar- rangement has been made with some of the leading building contractors to erect houses in groups of 100 or more at a profit of $100 per house of six rooms or less.

The result of the "more homes" cam- paign is an example of what effective co- operation will accomplish in constructive city building.

GORDON C. CORBALEY,
Executive Secretary, Seattle Chamber of Com- merce and Commercial Club.

Shop in the Morning

Saves time, heat and light
Helps everybody
Offers better service
Partakes of patriotism

Increases efficiency
Needs your encouragement

Takes less effort
Hastens business
Establishes better feeling

Means much to many
Operates to advantage of all
Rewards its votaries
Necessitates coöperation
Includes everyone
Needs constant practice
Gets best results

—From *Community Service*, Johnstown, Pa.

Cultivating the Surrounding Country

MARSHFIELD, WIS. — The Marshfield Chamber of Commerce recently arranged and promoted a two-day auto trip thru the country tributary to this city for the purpose of advertising the annual Central Wisconsin State Fair. The plan adopted was in keeping with the spirit of the times, and the commercial aspect was over- shadowed by the spirit of patriotism and loyalty that featured the program of exer- cises. At each village and city that made up the itinerary of the trip a selection was rendered by the Second Regiment Band preceding the announcement of the dates and the attractions of the fair. Special emphasis was placed upon the amusement features and the Red Cross Carnival. A

BOWSER
ESTABLISHED 1885

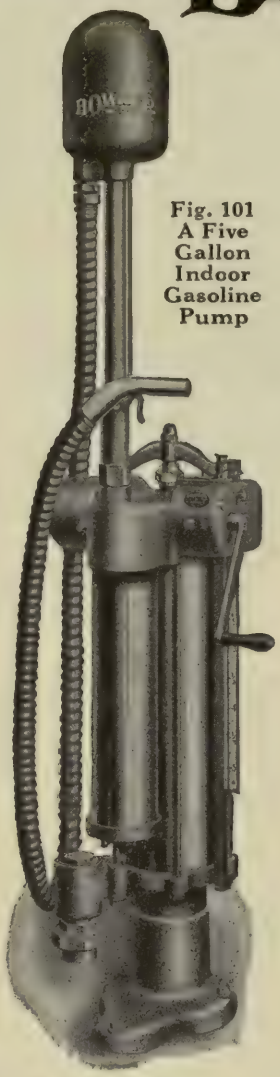


Fig. 101 A Five Gallon Indoor Gasoline Pump

Fig. 101 Pump

$267,560,740.00

This was America's Fire Loss for the year 1917.

80%

of it was due to carelessness.

A *great* percentage of it was caused by dangerous, inefficient methods of storing and handling gasoline.

BOWSER ESTABLISHED 1885 SYSTEMS

are *"Safe Efficient Economical"*

They bear the Underwriters' Label.

MORE THAN

456,450,000

gallons of gasoline are wasted every year.

HUNDREDS OF THOUSANDS

of barrels of Lubricating Oil are wasted annually.

80%

of these losses are due to careless handling.

BOWSER SYSTEMS would have saved the greater portion of these enormous wastes.

Municipalities should set the example.

Write for literature today. *"A System for Every Requirement."*

S. F. Bowser & Co., Inc. Fort Wayne, Indiana, U. S. A.
Sales Offices in all Centers
Representatives Everywhere

our-minute talk was also given on the ubject being used in attacking pro-ierman propaganda, viz., "Where did you et your facts?"

Twenty-seven hamlets, villages and cities ere reached on this tour. The local apers in twelve or more of the surround-ig municipalities contained favorable com-ient in regard to the Chamber of Com-ierce and on the enterprise of the citizens f Marshfield in conducting such a tour. his was declared to be the most suc-essful project to secure publiciy for larshfield ever undertaken. The entire ip was made without expense to the or-anization or the city.

FRANK B. LAMSON,
Managing Secretary, Marshfield Chamber of Commerce.

✣ ✣

Victory by Volunteering

LANSING, MICH.—In the picture of the ving "V" shown herewith, which is a ymbol of victory, are 1,460 of Lansing's oluntary subscribers to the Fourth Liberty oan. They have been called the Fourth iberty Loan Volunteers. Lansing believes that victory will come to the arms of the Entente Allies most quickly if the citizens of this country subscribe voluntarily to the federal war loans. This city raised its quota for the Fourth Liberty Loan in eight hours by encouraging voluntary subscriptions. The Liberty Loan apportionments for the Seventh Federal Reserve District have been over-subscribed where the Lansing plan was used. The war chest, which is amply sufficient for all war benevolences, was also filled by that plan.

CHESTER F. WEEMS,
Reporter, *The State Journal* of Lansing.

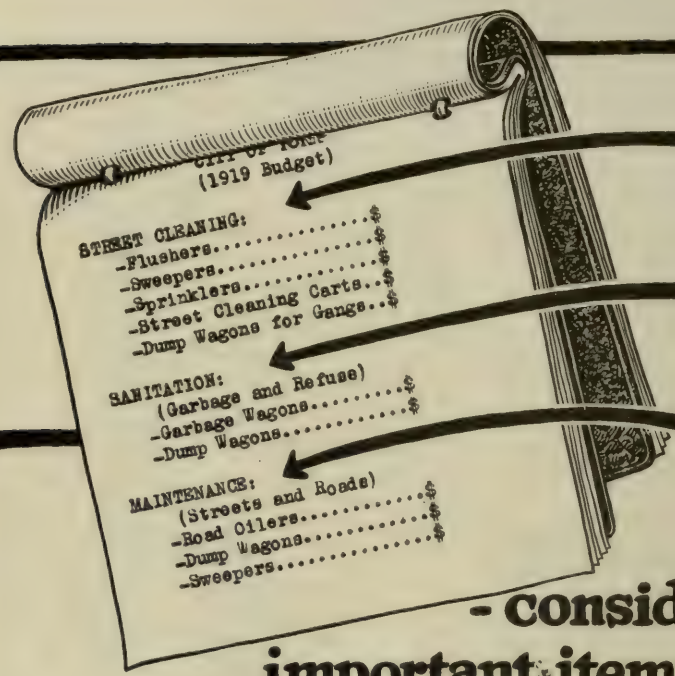
✣ ✣

Americanizing Duluth's Aliens

DULUTH, MINN.—The idea of Americanizing aliens thru education and community work handled by a representative city-wide committee is not new. In fact, in many large centers a considerable amount of money has been spent in that direction. The surprise, however, is that every industrial center with any considerable number of aliens has not been quick to see the possibilities in such a movement and to



1,460 OF LANSING'S FOURTH LIBERTY LOAN VOLUNTEERS APPEAR IN THIS "V"



-consider these important items for 1919

Include them in your budget for next year's expenditures. See that they receive the attention they deserve from those in authority. Request an appropriation sufficient to cover the cost of equipment necessary to keep your city healthy by keeping it clean.

Remember, proper sanitation and street cleaning methods and equipment mean more than mere civic pride—it is a matter of vital importance to the life and health of your municipality.

We'll be glad to give you the benefit of our experience in other communities and tell you how your street cleaning department can best co-operate with your health department in making your city a model of cleanliness.

Studebaker

South Bend, Indiana

Largest Manufacturers of Vehicles in the World

alize that employers are ready and wait-
g to support and encourage the work.
Duluth, with nearly sixteen thousand
iens, felt the need of some definite action
at would coördinate the work under one
neral head, to be conducted upon a broad
terpretation of the principle involved.
ith this in mind, the Commercial Club
lled together representatives of the edu-
tional institutions, members of the city's
ergy, representative club women, repre-
ntatives of labor, employers of aliens and
her business men who have close rela-
nship with the foreigners. These vari-
s individuals shaped a definite plan which
turally received the benefit of the many
ewpoints represented by those interests.
Then followed the forming of a work-
le organization. The work was divided
ong six well-defined departments, all act-
g under a chairman, a board of directors,
d a paid secretary. Great care was ex-
cised in the selection of the secretary, be-
use much of the success of the movement
sts with this man.
The most gratifying part of the work of
ganization was the keen interest evi-
nced in it by the employers. In raising the budget and asking the employers to underwrite the movement, each one was solicited upon a basis of thirty cents per employe on the pay-roll, and, without a single exception, the employers subscribed immediately to their allotment. The Board of Education was also quick to see the importance of the movement in connection with its night schools, and added material financial assistance.

The need is great; the effect upon society as a whole is most beneficial; and last, but not least, employers usually are glad to help promote a real common-sense Americanization program.

I. W. LEE,
Assistant Secretary, Commercial Club of Duluth.

A Chamber of Commerce War Bulletin Board

EL DORADO, KANS.—A picture of the war bulletin board recently erected by the Chamber of Commerce on the County Court House lawn in El Dorado is shown herewith. The sign, exclusive of the pillars, is 25 feet long and 10 feet high. It is steel-faced and elaborately colored and has created a great deal of favorable comment.



THE WAR BULLETIN BOARD ERECTED ON THE COUNTY COURT HOUSE GROUNDS BY THE EL DORADO, KANS., CHAMBER OF COMMERCE

Allies!

AMERICA'S might is behind the gallant men who are striking with pent-up fury, dealing trip-hammer blows along the entire extent of the fighting front,—our Allies.

The fires of industry glow white-hot where the men of toil are forging the guns to deal out defiance to Autocracy. Every mighty force is responding to the needs of marching millions.

We are under way full tilt at last. Hear the roar and din of Yankee might. See the sweeping onrush of Nations at battle speed.

As America must aid our gallant Allies in this great world crisis and strike here and there with telling effect, so motor trucks must be the connecting link between the railroads, and the ships which bridge the bosom of the Atlantic—*their* Allies!

They are the Allies of every other form of transportation.

Here and there they dart
the highways, taking up the sl
relieving deadening congest
bringing up the essentials of
from districts which might ot
wise be isolated but for the wor
relief being done by motor tru
Motor trucks are carrying
share of the load, hauling mill
of tons of vital materials every

It is of vital importance
that every essential industry
supplied with motor truck eq
ment which fits in accurately
its needs.

Our specialists in transporta
matters, backed by the Gar
full and complete line of m
trucks of varying capacity
power, will be glad to co-ope
with you in your hauling proble

There is no problem too larg
too small to have our fullest at
tion and honest opinion.

See the nearest Garford De
or write us. Address Dept. 10

The Garford Motor Truck Co., Lima, Ohio

Manufacturers of Motor Trucks of 1, 1½, 2, 3½, 5 and 6 ton capacity; 4½, 7 and 10 ton Tractors

Distributors and Service Stations in all principal cities

Garford
MOTOR TRUCKS



The picture shows the boys coming out of the trenches; a battle tank is shown in action in the background, and fighting planes are hovering overhead. The border of the sign is in red, white and blue.

The bulletin board is illuminated at night by a 1,000-candle-power reflector placed on the roof of the three-story bank building across the street. The cost of the sign and the reflector was $175. The sign will be maintained by the Chamber of Commerce exclusively to advertise approved war activities. After the Fourth Liberty Loan campaign has ended, the figure of "Liberty" will be removed and a striking picture of an American soldier will be substituted, with an appeal designed for the United War Work campaign set for November 11-18. Thereafter such war auxiliary activities as the Red Cross, the Food Administration, etc., will be advertised.

WILLIAM KENNEDY,
Secretary, El Dorado Chamber of Commerce.

Results of Public Health Work in Fort Worth

Fort Worth, Tex.—In March, 1918, The American City published an item about the extra-cantonment zone sanitary work which was to be undertaken in Fort Worth by the United States Public Health Service thru the efforts of the Fort Worth Chamber of Commerce. It is a great pleasure to be able now to enumerate a few of the results that have been achieved in the three months that the work has been in actual operation under the leadership of Dr. J. G. Townsend, the directing head of the local branch of the United States Public Health Service.

In its campaign to make good health contagious in Fort Worth, the Public Health Department first analyzed the city's water-supply, which is obtained from Lake Worth, a large artificial lake, and found it to be absolutely safe for human consumption.

A survey of the sewerage system, however, disclosed the fact that there were several hundred unsewered homes within the city's corporate limits, but with the coöperation of the municipal authorities, the number of unsewered homes has been reduced to a paltry few.

On the immediate watershed of Lake Worth, where numerous camps and summer homes have been constructed, the Health Department is supervising the installation of a large number of sanitary closets of the double-compartment type. About 250 rural homes in the vicinity of Camp Bowie are also being equipped with these toilets.

All swamps adjacent to the city have been drained; the banks of the rivers and creeks within a ten-mile radius have been cleared of vegetation and rubbish, and the method of garbage disposal has been thoroly systematized.

The next move was to place all dispensaries of food and drinks on a sanitary basis. Public eating places and drink emporiums were screened. Every person engaged in handling food was subjected to a strict health examination; all were required to undergo treatment if they failed to pass the government test, and were inoculated against typhoid fever. The common roller-towel and the public drinking cup have been abolished. Even soda fountains are required to serve all drinks in individual paper containers, and all dishes from which food is served are regularly sterilized.

The first inspection of the packing plants and meat markets by the Public Health Service found these establishments in an excellent sanitary condition, and since the United States Health Department has been established in Fort Worth, not a single complaint has been made against them. The meat inspection department is handled by municipal authorities, coöperating with the Public Health Service. The packing plants and retail meat stores are visited daily by the inspectors.

Three hundred dairies furnishing milk to the city are under constant government surveillance. Tests are made of their output, and only safe milk is permitted to be sold in the city. The manner in which milk is pasteurized, bottled and delivered is closely observed by the health officials, and the regulations concerning the sanitary handling of milk, all the way from the cow to the consumer, are rigidly enforced. Even private families selling milk for human consumption operate under a government-approved license, and every pint of milk consumed in Fort Worth is first inspected by the government health experts.

A strict sanitary code has been laid down for the barber shops, and it is being observed to the letter. All instruments are thoroly sterilized, and individual towels

FEDERAL



Another FEDERAL

Federal with special sewer cleaning equipment, used by the city of Cambridge, Mass. "Continually good service."

City Engineers Know Federal Superiority!

IN a great number of prominent cities the Federal Truck is giving satisfactory service in the city work. In street construction, street cleaning, sewer cleaning—and many other kinds of service Federals are standing up under rigid tests.

In city work a truck is judged according to careful cost figures and that the Federal is so satisfactory is proof of its advantages in economy and efficiency. Federal rugged strength, durability and low cost of upkeep enable it to answer every haulage requirement.

Write us and we will send you the monthly magazine, "Traffic News," a publication for the truck owner and buyer.

Federal Motor Truck Company
34 Federal Street Detroit, Mich.

One to Seven Ton Capacities

"Return Loads Will Cut Your Costs"

e used for every patron. The use of the rm-laden alum stick is prohibited, and rbers are restrained from treating skin uptions.

The Health Service maintains a free nic for inoculation against typhoid and r the treatment of venereal diseases. early 20,000 vaccinations against typhoid ve already been made, and the total num- r of inoculations will probably reach ,000 before the task is completed. These ccinations cost the Government an aver- e of one dollar each.

When typhoid fever, diphtheria or other ntagious diseases are reported to the alth authorities, an inspection is im- ediately made of the premises where the tient is confined, and necessary precau- ns to prevent the spread of the disease e instituted. The Health Service makes effort to treat cases, its principal work ing to prevent an epidemic of the disease.

The Medical Department of the Texas ristian University has been turned over the Government and has been thoroly uipped for the scientific treatment of nereal diseases; the old county jail is ing converted into a detention sanitarium r female patients. The Red Cross sup- ies a male and a female nurse, and the blic Health Service furnishes a physician r this treatment.

The Fort Worth Chamber of Commerce actively coöperating with the United ates Public Health Service in all its ork. The Chamber is furnishing the ealth Service approximately 12,000 square et of office space, and is supplying the orkers with five automobiles for their nvenience in getting around.

The fact that there is less sickness in ort Worth than ever before is the best idence of the effectiveness of the work ing done by the Public Health Ser- ce in this city. Its great effectiveness in nserving the health of the soldiers at amp Bowie is apparent.

C. C. GUMM,
Manager, Fort Worth Chamber of Commerce.

A Request From Australia

Secretary George FitzPatrick, of the Millions Club of Sydney, New South Wales, Australia, is anxious to enter into correspondence with commercial organiza- on secretaries in the United States in order to establish a close relationship between his organization and those in this country. The Millions Club is an organization engaged in activities similar to those of the average chamber of commerce in the United States. Mr. FitzPatrick has asked especially that information in regard to the following points be sent to him in tabular form:

1.—Name of the organization
2.—Secretary's name and address
3.—Population of the city
4.—Membership of the organization
5.—Annual income from membership dues
6.—Number of meetings held annually
7.—Number of luncheons held annually
8.—Average cost of luncheon
9.—Copy of sample menu, if procurable
10.—Amount of secretary's annual salary
11.—Does the secretary devote his entire time to the work?
12.—What are the methods of boosting towns?
13.—What methods are adopted to secure new members?
14.—Is the membership increasing or decreasing?

Address George FitzPatrick, secretary of The Millions Club, 19a Elizabeth Street, Sydney, New South Wales, Australia.

New Bulletins

BIRMINGHAM, ALA.—*Birmingham*, published monthly by the Chamber of Commerce to help in building up the city and the district.

ENID, OKLA.—*The Builder*, the official organ of the Enid Chamber of Commerce. Published monthly.

PORT HURON, MICH.—*Current Affairs*, the official monthly publication of the Port Huron Chamber of Commerce.

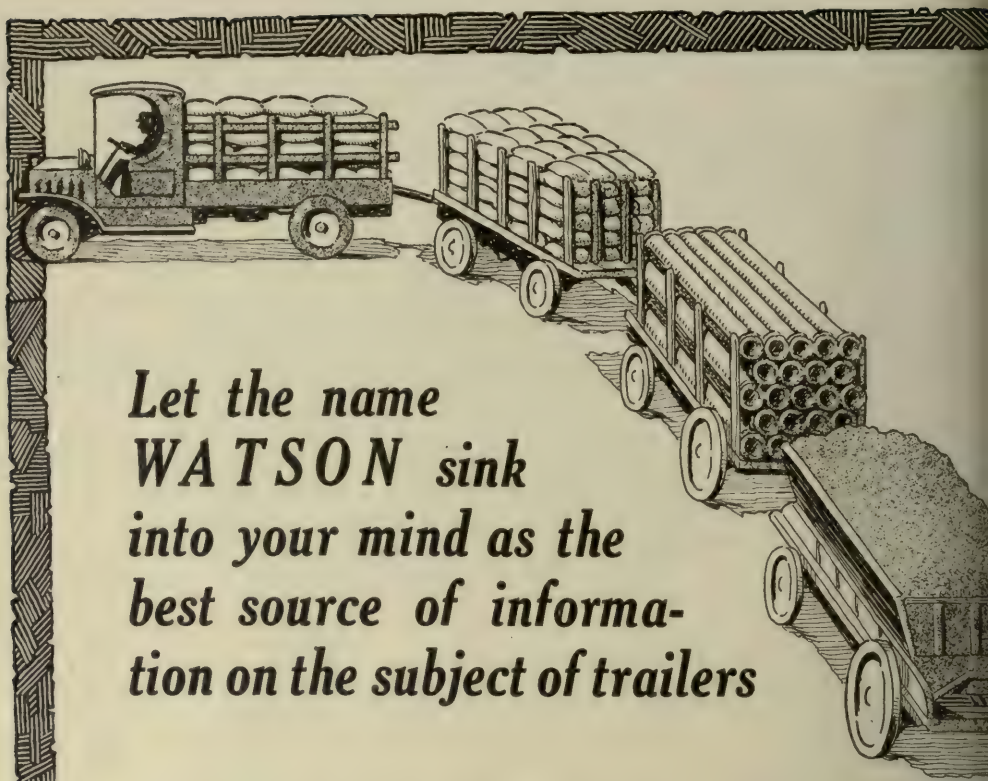
Recently Issued Printed Matter

BANGOR, ME.—"What Our Chamber of Commerce Has Done. A Record of Four Months' Activities," a pamphlet issued by the Bangor Chamber of Commerce.

CINCINNATI, OHIO.—The Sixty-Ninth Annual Report of the Cincinnati Chamber of Commerce has just been issued.

COLUMBUS, IND.—"Over the Top at Sundown" is a pamphlet issued by the Columbus Chamber of Commerce in which is told the story of how Bartholomew County, Ind., raised 111 per cent of her quota in the Fourth Liberty Loan in one day without the solicitation of a subscription.

NEW YORK, N. Y.—"Queens Borough Branch, United States Employment Service," is the title of a four-page folder issued by the Chamber of Commerce of the Borough of Queens. It explains the program of the United States Employment Service.



Let the name WATSON sink into your mind as the best source of information on the subject of trailers

When you think of using trailers send us your address. Our advice and suggestions are free—and perhaps our experience in solving trailer problems for others will help you to get just the right sort of equipment to make the greatest possible reduction of your haulage expense.

We also make semi-trailers, dump trucks and dumping wagons of all desirable types. Why not send for our catalog?

Watson Wagon Company

30 Centre Street **Canastota, N. Y.**

Changes among the Secretaries

A LIST of the recent changes and new appointments occurring among the secretaries of the commercial or-nizations thruout the United States is w being published in THE AMERICAN RY. Will readers kindly notify the itors of such changes as soon as they cur.

CHARLES G. ADAMS has resigned the secre-yship of the Auburn, N. Y., Chamber of mmerce, to accept a position with the War ade Bureau in Washington.

H. E. BODINE has resigned the secretaryship the Altoona, Pa., Chamber of Commerce, to come secretary of the Fort Wayne, Ind., mmercial Club.

CHARLES H. BREN is the new secretary of Salina, Kans., Chamber of Commerce, suc-ding T. S. Jamieson.

DANIEL F. CONROY is the new secretary of Chamber of Commerce at Norwich, N. Y., not at Utica, as stated in the October ue. No change has taken place in the secre-ial staff at Utica.

W. S. DEWITT has resigned the secretaryship the Orlando, Fla., Board of Trade.

V. P. DREW is the new secretary of the vonne, N. J., Chamber of Commerce, suc-ding William H. Barbour.

. ROBERT GALLOWAY has resigned the secre-aryship of the Charlotte, Mich., Community sociation and the Eaton County War Board, accept a position as assistant executive di-tor of the War Civics Committee of East Louis. This committee works under the ervision of the Community Organization nch of the Industrial Service Section of United States Ordnance Department.

LEROY M. GIBBS has resigned the secretary-p of the Oklahoma City, Okla., Chamber Commerce, to accept the secretaryship of Waterbury, Conn., Chamber of Commerce.

V. K. GREENBAUM has been elected secretary the Michigan City, Ind., Chamber of Com-rce.

. J. HOFFMAN, executive secretary of the lustrial and Traffic Bureau of the Scranton, , Board of Trade, has been granted an in-nite leave of absence to engage in Red oss work.

NATHAN M. HUTCHISON has been elected retary of the Aurora, Ill., Commercial Club, ceeding John M. Peffers, resigned.

EDWARD JENKINS is the new secretary of Dover, N. J., Chamber of Commerce, suc-ding Capen A. Fleming.

CHARLES H. JONES has resigned the secretaryship of the Cortland, N. Y., Chamber of Commerce, to accept a position with the United States Employment Service at Cortland. Mrs. F. L. Jones, his wife, has been selected as his successor.

B. R. KIRK has resigned the secretaryship of the Manistique, Mich., Chamber of Commerce.

WALTER LOVELAND has resigned the secretaryship of the Chamber of Commerce at St. Joseph, Mich.

H. L. MCCARTER, of Cleveland, Ohio, has been elected secretary of the Ogdensburg, N. Y., Chamber of Commerce.

W. A. MCELROY has resigned the secretaryship of the Gilmer, Tex., Board of Trade, to accept the secretaryship of the Bartlesville, Okla., Chamber of Commerce.

C. L. MARINER is the new secretary of the Newport, Ark., Chamber of Commerce.

MRS. ALTA MARSHALL has resigned the secretaryship of the Venice, Cal., Chamber of Commerce.

WILLIAM E. MATTHEWS is the new secretary of the Berlin, N. H., Chamber of Commerce, succeeding Philip P. Gott.

F. ROGER MILLER has resigned the secretaryship of the Board of Trade of Morristown, Tenn., and the presidency of the East Tennessee Commercial Executives' Association, to accept the secretaryship of the Chamber of Commerce of Macon, Ga.

WALTER B. MOORE has been elected secretary of the reorganized Board of Trade at Winnipeg, Canada.

JOHN F. NOE is the new secretary of the Cohoes, N. Y., Chamber of Commerce, succeeding W. C. Tifft.

S. B. PRICE has resigned the position of manager of the Convention Department of the Peoria, Ill., Association of Commerce, to accept the secretaryship of the Bridgeport, Conn., Chamber of Commerce.

W. W. SANDERS is the new secretary of the Gilmer, Tex., Board of Trade, succeeding W. A. McElroy.

A. SARTORI has been elected secretary of the LeMars, Ia., Commercial Club, to fill the vacancy created by the resignation of Edward G. Fairfield.

JOHN G. SCHERF is the new secretary of the Cloud County Chamber of Commerce, at Concordia, Kans.

J. B. WILES has resigned the secretaryship of the Philipsburg, Pa., Chamber of Commerce, to accept the secretaryship of the Parkersburg, W. Va., Board of Commerce.



SIX MILLION LETTERS from men in the American Expeditionary Forces were brought to this country recently by a French Steamship!

MOTOR TRUCKS are more essential handling of Uncle Sam's mail th before.

"SPEED UP" has been the business slogan the war.

THE DELIVERY of mail with the greatest c has been accomplished only with the assis the motor truck.

DELAYS are disastrous! Dependable tires delays and give uninterrupted service.

FISK SOLID TIRES are dependable—full strength. When you need Solid Tires—bu

"There is now a Fisk Tire for every motor vehicle that rolls."

FISK SOLID TIRE

National Association of Commercial Organization Secretaries to Meet in Rochester This Month

The National Association of Commercial Organization Secretaries will hold its annual meeting in Rochester, N. Y., on November 18-20, in the beautiful new building of the Rochester Chamber of Commerce. The sessions of the National Civic Secretaries' Association, the National Association of Convention Bureaus, and the National Municipal League Conference on War Reconstruction, will be held either in conjunction with, or immediately after, the convention of the N. A. C. O. S., whose program includes the following:

NOVEMBER 18

The Best Way to Get an Effective List of Prospective Members, and the Best Way to Use It
C. F. Holland,—James G. Brownlow, F. F. Eubank
Making the Commercial Organization Known and Understood
F. D. E. Babcock,—A. V. Snell, Richard A. Blake
Industrial Surveys, What They Are, What They Are For, and Their Results
Robert H. Manley,—Robert J. Beacham, G. C. Smith
How Best to Stimulate Interest Thru Social Functions
Walter S. Whitten,—W. E. Morrow, E. C. Hackett
The Secretary of the Average City or Town—General Analysis of His Duties and Problems
Ralph Faxon,—John H. Duffy, John Wunderlich
The Things Which Make for His Efficiency
E. D. Bevitt,—W. O. Lochner, A. D. MacMillan
Efficient and Simple Methods of Keeping His Records of Members and Their Pay of Dues; Expenditures (with exhibit)
E. M. McMahon,—Louis E. Deuble, R. B. Beach
The Mechanics of His Office (with exhibit)
Lee H. Bierce,—Charles R. Hebble, C. W. Haensel

NOVEMBER 19

Rebuilding an Organization
Paul V. Bunn,—Ralph S. Baker, Joseph Leopold
Making More Effective the Already Successful Organization
E. H. Krueger,—Don E. Mowry, T. C. FitzGibbon
Is It Good Business to Force Delinquent Members to Pay Dues?
Bruce Kennedy,—J. A. Ford, M. C. John
How Best to Inform Members in Reference to Solicitations: For Subscriptions; For Advertising in Programs, etc.; For the Purchase of Tickets
A. L. Sommers,—T. J. Appleyard, G. W. Dudderar
Relation Between the City Business Man and His Country Cousin
N. G. Bartlett,—William H. Howard
The Elements of Reconstruction
David C. Adie
Community Reorganization and Reconstruction
Fred C. Butler
The Community House—An Element in Reconstruction
Samuel Wilson
How to Fail as a Secretary
Munson Havens,—S. Cristy Mead, William George Bruce, James A. McKibben

NOVEMBER 20

Industrial Readjustment to War-Time Conditions
The Resources and Conversion Section
John M. Guild
Problems of Labor Supply and Adjustment
Roland B. Woodward

Municipal Lighting Statistics

The following interesting table, used by courtesy of the McGraw Central Station List for 1918, shows that 35.5 per cent of all the lighting systems thruout the United States and its territories are municipally owned. The large proportion of plants giving day service is also noteworthy:

State	Total No. of Cos., Inc. Mun. Systems	No. Having Day Service	No. of Mun. Ltg. Systems
Alabama	61	40	33
Alaska	11	10	0
Arizona	24	19	2
Arkansas	77	56	19
California	94	71	19
Colorado	60	48	10
Connecticut	38	31	4
Delaware	13	5	6
District of Columbia	2	2	6
Florida	73	46	22
Georgia	140	92	93
Hawaii	3	3	0
Idaho	34	25	6
Illinois	228	160	80
Indiana	195	143	71
Iowa	208	182	91
Kansas	219	170	129
Kentucky	89	49	20
Louisiana	57	44	25
Maine	83	53	4
Maryland	46	27	9
Massachusetts	123	92	36
Michigan	191	131	87
Minnesota	190	155	106
Mississippi	77	45	41
Missouri	206	121	73
Montana	49	28	6
Nebraska	199	145	105
Nevada	9	8	1
New Hampshire	54	32	3
New Jersey	59	46	12
New Mexico	24	21	4
New York	315	202	49
North Carolina	108	73	48
North Dakota	82	44	13
Ohio	279	167	121
Oklahoma	122	92	67
Oregon	56	43	10
Pennsylvania	238	173	42
Philippine Islands	4	3	0
Porto Rico	3	2	0
Rhode Island	11	10	2
South Carolina	65	38	24
South Dakota	92	69	25
Tennessee	83	52	27
Texas	212	153	17
Utah	29	27	13
Vermont	58	38	13
Virginia	80	46	15
Washington	80	55	13
West Virginia	60	38	6
Wisconsin	268	185	97
Wyoming	29	21	5
Total	5,210	3,631	1,851

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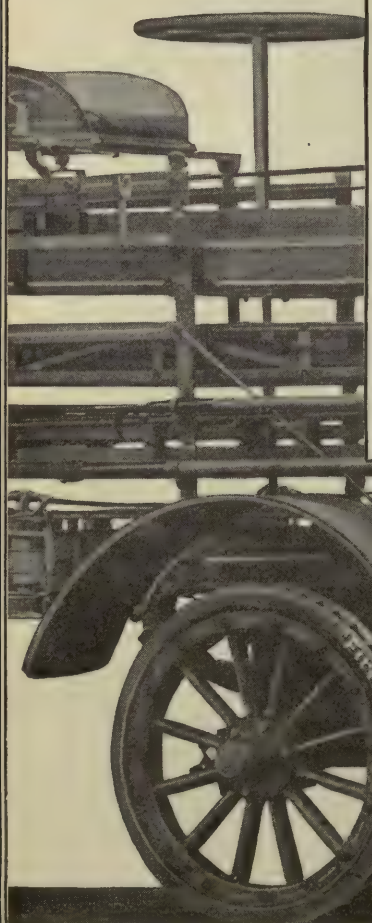
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Conducted by A. L. H. Street, Attorney at Law

For special assistance in ascertaining the law, statutory or judicial, on any legal question relating to municipalities, address Legal Department, THE AMERICAN CITY, *Tribune Building, New York City.*

City-Manager Plan in Virginia

Advocates of the adoption of the city-manager form of government for the city of Roanoke, Va., recently won a decision of the State Supreme Court of Appeals in their favor, thereby apparently putting in force the change and permitting the induction into office of the five commissioners elected in June. At an election held in May it was voted to adopt the new governmental plan. The change in form of government was voted under constitutional and statutory provision authorizing such changes by Virginia cities, but question has been raised as to whether establishment of a new plan requires the vote merely of a majority of the electors voting on the issue, or a majority of the entire electorate of the city. The Supreme Court's decision does not settle this question; the Roanoke case being disposed of upon the technical ground that the action of the circuit judge in certifying the result of the election to the City Council was not subject to appeal. It seems, however, that the Supreme Court also overruled a contention made on the part of the opponents of the adoption of the new plan, to the effect that an act of the Legislature under which the election was held had not taken effect at the time that the election was conducted.

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Parliamentary Proceedings in Council

A municipal council, like other legislative bodies, has a right to reconsider, under parliamentary rules, its votes and action upon questions rightfully pending before it and rescind its previous action. This right is recognized by the Illinois Cities and Villages Act. The rule of the Chicago Council which authorizes the taking from the table of a motion laid there at the same meeting, provided that two-thirds of the aldermen support to the motion to take from the table, does not limit the right to take a motion from the table at a subsequent meeting. Confirmation by the Chicago Council of the Mayor's appointment of members of the Board of Education was subject to reconsideration and disapproval by the Council, the motion to reconsider the vote of approval being made at the same meeting at which the vote was taken, and the motion lying on the table until the next regular meeting, at which the disapproval of the appointments was voted. (Illinois Supreme Court, People vs. Davis, 120 Northeastern Reporter, 326.)

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Validity of Local Assessments

Proceedings for the construction and installation of electroliers and a conduit system for the purpose of lighting streets, at the expense of property within a benefited district, are not rendered invalid as amounting to an unconstitutional deprivation of the owner's property rights without due process of law because it is proposed to connect the improvement with an electric company's lines for the purpose of lighting service; it not being contemplated that the electroliers and conduits should become a part of the company's plant. But a resolution declaring municipal intention to proceed with a street improvement is invalid where it disregards a charter requirement for a specific designation of the streets to be improved. (California District Court of Appeal, Park vs. Pacific Fire Extinguisher Company, 173 Pacific Reporter, 615.)



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Fire started in centre pile of pulp wood from short circuited electric wire, and spread to piles on either side. In back of pulp piles 26 freight cars of coal and wood were destroyed.

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Abandonment of Proceedings

The city of Syracuse, having proceeded under a statute which authorized the condemnation of land for an intercepting sewer system, and which provided that title to the land should vest in the city on appointment of commissioners to ascertain the property-owners' damage, and such commissioners having been appointed, the proceedings passed beyond the point where they could be abandoned by the city. A failure on the part of the municipal authorities to perform the duty of making compensation—the only duty remaining in connection with the acquisition of title—with reasonable dispatch would justify application of the owners for a court order compelling action. A city is equitably estopped to deny its power or obligation to proceed under a statute providing for the condemnation of land, especially when the city authorities have themselves secured enactment of the statute. (New York Court of Appeals, In re City of Syracuse [Sewage Disposal Works], 120 Northeastern Reporter, 203.)

✣ ✣

Policeman as "Employe"

Following decisions of the highest courts of other states, in the absence of a precedent laid down by the Pennsylvania Supreme Court, the Court of Common Pleas for Crawford County, Pennsylvania, lately decided that a boro policeman is not an "employe" within the meaning of the Pennsylvania Workmen's Compensation Act. Hence, defendant boro is held not to be liable for accidental death of a special policeman who was fatally injured while attempting to push a stalled automobile from railroad tracks. The Court quotes the following language used by the Michigan Supreme Court:

"Policemen generally are charged with the special duty of protecting the lives of citizens * * and preserving the public peace. The preservation of the public peace being a matter of public concern, it has therefore been said that policemen may be considered as public officers. As a rule, they are appointed under authority given by the state and therefore have generally not been regarded as servants or agents or as otherwise bearing a contractual relation to the municipality."

A similar conclusion has been reached by the Kansas Supreme Court, but, based on special statutory language manifesting an intention to include policemen within the benefits of the Workmen's Compensation Acts of Minnesota and Wisconsin, the Supreme Courts of the last-named states have decided that awards are properly made in those jurisdictions in favor of injured policemen or their surviving dependents. (Wise vs. Cambridge Springs Borough, 10 Municipal Law Reporter, Pennsylvania, 1.)

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Punishing Suspicious Persons

The Ohio Supreme Court, in the case of Welch vs. City of Cleveland, 120 Northeastern Reporter, 206, has sustained the validity of an ordinance defining what constitutes an offense, punishable by commitment to the workhouse, of being a "suspicious person." The pertinent part of the ordinance reads as follows:

"Section 1. That any person found loitering about any barroom, gambling-house, poolroom, vessel, house of ill fame or gaming device, or about pools or baseball, prize-fighting or horse-racing; or found wandering about the streets, either by day or by night, without being able to give a reasonable and satisfactory account of himself, and any person with opium, opium pipe, cocaine or heroin in his possession. and any person upon whom shall be found any device, instrument or thing used in the commission of burglary, larceny or other crime, or for picking locks or pockets, or any device, instrument or thing used in obtaining money under false pretenses; and any person who obtains his living by criminal means and practices or who is the companion and associate of criminal or other dissolute persons, and any person who deliberately and unnecessarily crowds or jostles passengers on street cars, railroads or in railroad stations for the purpose of committing theft or of aiding others to commit theft shall be deemed and held to be a suspicious person."

The ordinance is declared to be free from objection as being in conflict with the general Ohio statute providing for the punishment of suspicious persons who cannot give reasonable accounts of themselves, or as being beyond the constitutional power of self-government given to municipalities in Ohio.

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Pennsylvania Boro Ordinances

An ordinance of a Pennsylvania boro becomes effective despite a disapproval thereof expressed by the burgess verbally, or expressed by him in writing at a meeting later than the next regular meeting of the boro council following the meeting at which the ordinance was adopted. (Sefler vs. Boro of McKees Rocks, 10 Municipal Reporter, Pennsylvania, 6.)

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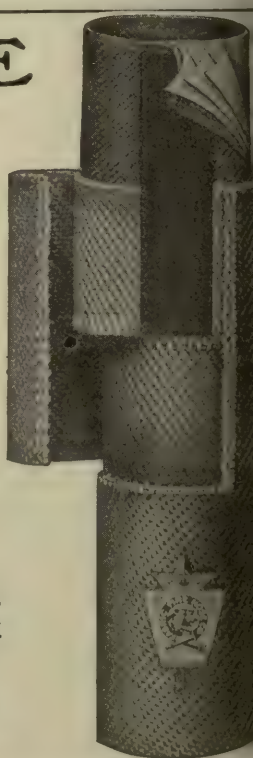
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unicipal Dumping Grounds

The fact that a city is given charter authority to establish and maintain a sanitary stem, and that a dump pile is a part of it, es not prevent the premises or condition om constituting a public or private nuiance. One owning property near the emises is entitled to restrain maintenance the nuisance constituted by discharge of wage, etc., in such manner as to exhale xious odors and gases. (Alabama Sueme Court, City of Selma vs. Jones, 79 uthern Reporter, 476.)

✣ ✣

ilroad Tracks in Streets

Persons owning property along a street e entitled to restrain the construction of municipal steam railroad on the street, here the fee title to the soil of the street in them and no steps have been taken for assessment of the damages resulting to e abutting property. And, even if the le to the land occupied by the street be the city in fee, the abutting property ners are entitled to enjoin construction the railroad on its appearing that the y is not legally authorized to establish e same. (Texas Court of Civil Appeals, ty of Orange vs. Rector, 205 Southstern Reporter, 503.)

Baltimore Milk Ordinance

An ordinance adopted in Baltimore regulating the production and distribution of milk and milk products in the city constitutes a valid exercise of the city's power to provide for cleanliness and health. The ordinance is not invalidated by difficulties encountered by milk producers and distributors in adapting their plants to the ordinance by reason of war conditions interfering with securing necessary labor and materials. (Maryland Court of Appeals, Creaghan vs. Baltimore, 104 Atlantic Reporter, 180.)

✣ ✣

Lighting Contract Interpreted

In a controversy between a city and an electric company under a lighting contract, it is decided that the agreement is so worded that it was open to the city to order a reduction in the size of lamps used, but that there could be no reduction in the compensation to be paid the company. When a municipal contract is ambiguous in its language, the doubtful language should be resolved in favor of the municipality (Washington Supreme Court, Puget Sound International Ry. vs. City of Everett, 175 Pacific Reporter, 40.)

On the Calendar of Conventions

VEMBER 12-16.—ST. LOUIS, MO.
National Tax Association. Annual conference. Secretary, Fred R. Fairchild, Yale University, New Haven, Conn.

VEMBER 14-15.—PASCO, WASH.
Washington State Good Roads Association. Annual convention. Secretary, Clancey M. Lewis, 405 University Street, Seattle, Wash.

VEMBER 18-20.—ROCHESTER, N. Y.
Association of Convention Bureaus. Annual convention. Secretary, Fred Houser, Convention Bureau, Atlanta, Ga.

VEMBER 18-20.—ROCHESTER, N. Y.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary, J. P. Hardy, Commercial Club, Fargo, N. D.

VEMBER 19-21.—ASHEVILLE, N. C.
Southern Appalachian Good Roads Association. Secretary, A. G. Gilmer, Bristol, Tenn.

VEMBER 20-22.—ROCHESTER, N. Y.
National Municipal League. A conference to discuss American reconstruction problems. Secretary, Clinton Rogers Woodruff, North American Building, Philadelphia, Pa. See page 354, in this issue.

VEMBER 24-25.—NEW YORK CITY.
Open Forum National Council. Annual meeting. Secretary, Harold Marshall, 359 Boylston Street, Boston, Mass.

VEMBER 25-27.—BOSTON, MASS.
National Housing Association. Annual meeting. For all details apply to Lawrence Veiller, Secretary, 105 East Twenty-second Street, New York City.

NOVEMBER 26-28.—WINNIPEG, MAN.
Union of Manitoba Municipalities. Annual convention. Secretary, Robert Forke, Pipestone, Manitoba.

DECEMBER 2-6.—CHICAGO, ILL.
American Association of State Highway Officials. Annual meeting. Acting Secretary, A. D. Williams, Morgantown, W. Va.

DECEMBER 3-6.—NEW YORK CITY.
American Society of Mechanical Engineers. Annual meeting. Secretary, Calvin W. Rice, 29 West Thirty-ninth Street, New York City.

DECEMBER 4-6.—ATLANTIC CITY, N. J.
Chamber of Commerce of the United States of America. War Emergency and Reconstruction Conference of Industrial War Service Committees. Secretary, Elliot H. Goodwin, Riggs Building, Washington, D. C.

DECEMBER 9-12.—CHICAGO, ILL.
American Public Health Association. Annual meeting. Acting Secretary, A. W. Hedrich, 126 Massachusetts Avenue, Boston, Mass.

JANUARY 15-16.—NEW YORK CITY.
American Society of Civil Engineers. Annual meeting. Secretary, Charles Warren Hunt, 33 West Thirty-ninth Street, New York City.

JANUARY 22.—CHICAGO, ILL.
Western Society of Engineers. Annual meeting. Secretary, Edgar S. Nethercut, 1735 Monadnock Block, Chicago, Ill.

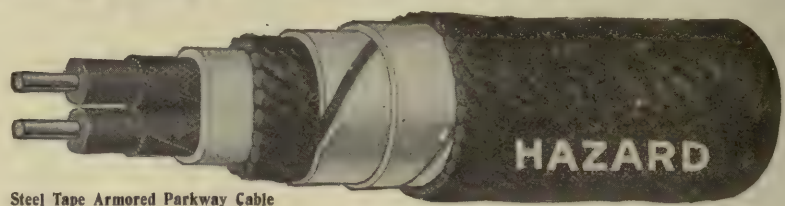
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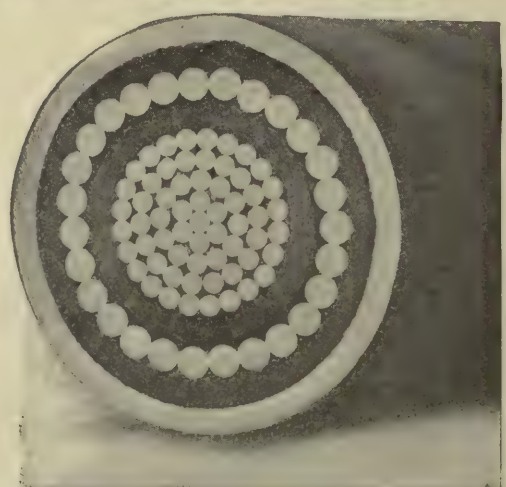
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ER, DANIEL H., Construction Economist and Consulting Engineer.

Modern Management Applied to Construction. x + 194 pp. $2.65

gineers and contractors who have maintained that rinciples of scientific management are not applicable gineering and architectural construction will be hard o it to defend themselves against the logic of Mr. r's book. He analyzes scientific management, com- it with the old hit-and-miss method, defines the iples of modern management, discusses the relation ance and efficiency and the fundamental factors to be dered in choosing a plan. He also discusses the ation of motion studies and time studies to such tions as shoveling and bricklaying, and comments the shape of shovels, the various types and the ods of handling them. In his last four chapters he up the application of modern management to con- tion work, including estimates of costs, cost-keeping ookkeeping, the systematizing of construction and the of modern management upon workmen.

COLN, EDMOND EARLE, M. A., Ph. D., Instructor in Economics and Tutor in the Division of History, Government and Economics at Harvard University.

The Results of Municipal Electric Lighting in Massachusetts. 1918. 484 pp. $3.00

is volume, one of the Hart, Schaffner and Marx Economic Essays, is a careful analysis of the mual ownership problem as it affects electric light plants. author first undertakes a survey and criticism of the ture on the subject, the Massachusetts laws, and the rs of the Massachusetts Board of Gas and Electric Commissioners. He then follows thru the develop- of the industry, the methods and comparisons which be followed to obtain accurate results, develops cal statistics of the plants, analyzes them, and makes ecessary comparisons, considers financial statistics as ital accounts, operating expenses, and income the cial statistics of generating and purchasing plants, sses the local background, and concludes that, after oo much attention has been paid to the financial and tical aspects of the regulations, while some of the fundamental elements have been lightly stressed. concludes with the argument that municipal plants ld be required to conduct themselves exactly as if were commercial enterprises, selling lighting service e city at a fair price and paying taxes at the usual with all municipal salaries entering into the cost ment as Management. In closing, he adds one word arning that only the simplest and "well-seasoned" prises are at all suitable for public operation, and under municipal ownership even these are in grave er of becoming less efficient than they would be in te hands.

MFOHR, E. W.

Organizing and Operating a Coöperative Delivery System. 31 pp. Illustrated. 1918. $10.00

short, compact statement of detailed plans and in- tions for organizing and operating delivery com- s, based upon the author's experience in installing such systems in Washington and California. It in- s advice as to the formation of the company, articles ncorporation, delivery schedule, working equipment, k forms, route sheets, central-station operation, de- y districts, charging merchants for delivery service, ction of goods, etc. It contains also instructions to ts and merchants, to drivers and managers, and help- ints on the upkeep of the system.

GOWIN, ENOCH BURTON, Assistant Professor of Commerce, New York University School of Commerce, Secretary of the Executive Club of New York and Member of the Staff of the Alexander Hamilton Institute.

The Selection and Training of the Business Executive. 1918. Tables, statistics, diagrams. ix + 225 pp. $1.65

Big business men are coming to recognize that executives do not grow out of small positions; they must be trained in the technique of their future calling, just as engineers must fit themselves. To meet the growing requirements in this field, Professor Gowin has analyzed the duties of executive positions, the asset values and essential qualities of an executive, and the influence of heredity and environment upon executives. In passing, he comments upon the claims of various systems of phrenology and physiognomy in determining or identifying character. After this analysis of the executive, Professor Gowin proceeds to discuss the methods of selection, the problems of selection standards, the weight to be given to experience and training, the various methods of training and the business books available, the various features of a training program, such as the development of a system, the systematic rotation of positions, conferences, clubs and other study associations, and the corporation school. The book concludes with an analysis of the incentive for the executive and the policy that should be followed regarding personnel.

SALIERS, EARL A., Ph. D., Assistant Professor of Accounting, Sheffield Scientific School, Yale University.

Principles of Depreciation. xii + 200 pp. Illustrated. $3.00

Dr. Saliers has developed a book primarily of interest to accountants, engineers and others who have to do with the financial and mechanical problems of modern corporate enterprise. He carries the development of his subject along three lines: (1) depreciation in its relation to government supervision of business; (2) depreciation of a factor in valuation; (3) the mathematical formulas for computing depreciation charges. He touches upon the character of the industrial plant, the hydro-electric plant, the uses of the plant ledger, the depreciation reserves as compared with depreciation funds, and the relation of depreciation to efficiency. He also discusses regulation by courts and commissions, the effects of the income tax, and the part played by land in valuation. In his third section on computing depreciation charges, he analyzes the six methods most commonly used—the straight line, reducing balance, sinking fund, annuity, equal annual payment and the unit cost methods. The appendix is devoted to the use of logarithms in computing interest charges over a period of years.

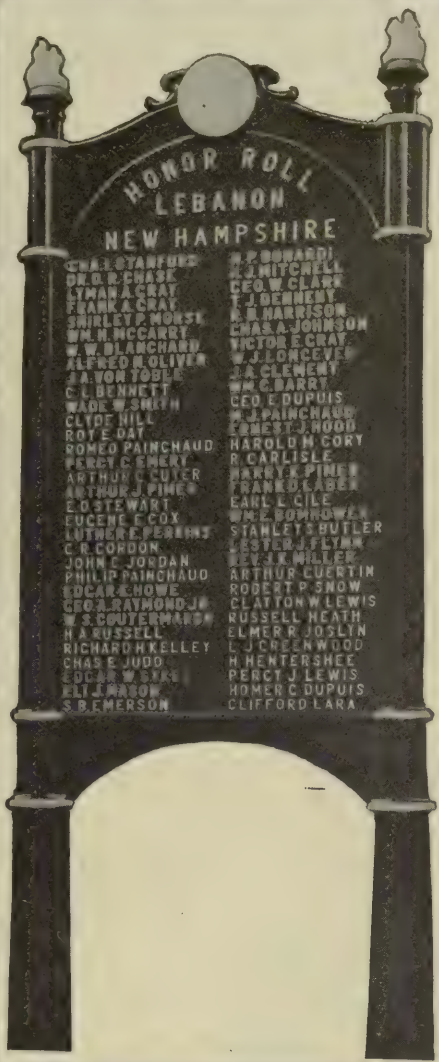
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UTZAHN, EVART G., Associate Director, Department of Surveys and Exhibits, Russell Sage Foundation, and
UTZAHN, MARY SWAIN.

The A B C of Exhibit Planning. 1918. xiv. + 234 pp. 61 illustrations. $1.60

nyone who has made a study of modern municipal life ot fail to appreciate the growing importance of the which exhibits are playing. While a standardized tice has not been fully worked out, still a beginning been made, and Mr. Routzahn has gathered together is compact volume the best of our current practice. liscusses among other things why we should wish to an exhibit, who should see it, what we shall do with hat we wish to say, what forms best convey the mean- how to utilize the space, how the exhibit should be preted, and how the project should be organized, ad- sed, followed up and financed. This discussion he ws with two illustrative plans for using exhibits— state campaign centering around a traveling exhibit, he other an exhibit for educational work. These are wed by concrete suggestions on the budget of the it, hints for committee work, and a bibliography of cations helpful to anyone engaged in the preparation exhibit.

VER, JOHN M., Head of the Department of Psychology and Education, Los Angeles State Normal School.

The Vocational Guidance Movement: Its Problems and Possibilities. 1918. 333 pp. $1.40

e problem of vocational guidance is coming to be nized as one of the most important which we face erica. Much has been said and written about voca- and industrial education, but vocational guidance not be confused with vocational education. The is concerned with but one step in adequate guidance. book covers all the steps: laying a broad foundation eful experiences, the study of educational opportunities, the choice of an occupation, preparation for it, entrance upon it, and the securing of promotions or readjustments. The author, in dealing with this subject, takes up the problem of the young worker, the danger of pseudo-guidance, the claims of scientific management as an agent of industrial efficiency, its relation to the individual development of the workers and to the general problem of turnover. He discusses also the work of the counsellor and the present methods of providing guidance in schools and occupations, and concludes with a program of vocational guidance which embodies a far-reaching school organization, course of study, appropriate records and individual counsel for every child, the supervision of the employment of all workers under 21, adequate vocational training both for pupils in school and young persons at work, and a legislative program which shall bring into effect the various requirements.

BROADHURST, JEAN, Ph. D., Assistant Professor of Biology, Teachers College, Columbia University.

Home and Community Hygiene. One of a series of Lippincott's Home Manuals. xiii + 428 pp. 118 illustrations. $2.15

Physicians and trained experts of hygiene are fast discarding the cloak of mystery which once wrapped about the art of keeping well. To-day the physician takes the public into his confidence, and his aim is not to cure the sick, but to keep well those who are well. The problem of keeping well is the individual's business just as much as it is that of the city and state health departments. The author of this book has sensed the need of a popular yet authoritative work which will fit in between the elementary text-books on hygiene used in the primary schools and the ponderous and technical medical volumes. The subject has been approached from the practical standpoint of the home-makers, such problems as sanitary engineering and health administration being touched upon but lightly, while those studies which are of immediate importance to the household are dwelt upon in greater detail.

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onstruction in Great Britain.

rds a New World. Being the reconstruction program British Labor Party, together with an introductory by Mr. Arthur Henderson, the leader of the party, manifesto to the labor movement from the English ship of Reconciliation. 40 pp. Price, 20 cents. y to W. R. Browne, Publisher, Wyoming, New)

Engineering Profession Fifty Years Hence.

. J. A. L. Waddell. Reprinted from *The Scientific ly*, Vol. VI, No. 6, June, 1918, and Vol. VII, Nos. 1 , July and August, 1918. This pamphlet is both fic and popular, and should make interesting reading ly for engineers, but for laymen as well. 1918. (Apply to Dr. J. A. L. Waddell & Son, Inc., 35 Street, New York City.)

Work Activities of the Monmouth Public Schools.

of the Board of Education, Monmouth, Ill., for year May 31, 1918. An attractive illustrated pamphlet pages, detailing practical war work done by school n. (Apply to L. L. Caldwell, Superintendent of s, Monmouth, Ill.)

mmunity Center.

it is, how to organize it, and a suggested constitu- y Henry E. Jackson. Bulletin, 1918, No. 11, of the of Education, Department of the Interior. 52 (Copies may be procured from the Superintendent cuments, Government Printing Office, Washington, at 10 cents per copy.)

New Social Order in America.

ly syllabus prepared as the coöperative product of ber of liberal thinkers. Contains material for dis- under ten main heads, including "Basic Principles ial Justice" and "Our Part in the Politics of Prog- October, 1918. 40 pages. (Copies may be secured cents each, eight for $1, or $12 per hundred, from l Hart, 807 Neave Building, Cincinnati.)

Public Safety.

The Rochester Public Safety Campaign, March 1 to September 1, 1918. A full report by Julian H. Harvey of the most complete public safety campaign yet undertaken, including data for use in planning similar campaigns—suggestions as to publicity, lectures, films, use of schools, etc. 149 pp. Illustrated. Price $1.00. (Apply to W. H. Cameron, Secretary, National Safety Council, Continental and Commercial Bank Building, Chicago, Ill.)

House and Town Development in War Time.

By Thomas Adams. An opportunity for government enterprise, outlined by the Town Planning Advisor of the Canadian Commission of Conservation, July, 1918. 15 pp. A treatment of the possibilities of the garden city movement applied to newly developing American communities. No. 49 of the National Housing Association Publications, 105 East 22d Street, New York City. Price 10 cents.

Typical Specifications for Bituminous Road Materials.

Bulletin No. 691 of the United States Department of Agriculture. By Prèvost Hubbard, Chemical Engineer, and Charles S. Reeve, Chemist. A valuable bulletin for county road officials. 1918. 60 pp. (Apply to the Office of Public Roads and Rural Engineering, United States Department of Agriculture, Washington, D. C.)

Standards Set by the New Federal War Suburbs and War Cities.

A survey of the housing of war workers in England and Scotland, with plans and descriptions of the suburbs, villages and cities which the Federal Government is building to meet the war conditions in this country. October, 1918. 24 pages. Illustrated. (Apply to the American Civic Association, Union Trust Building, Washington, D. C.)

"Picturelooks" for the Boys in France.

An 8-page pamphlet which tells of the need of lantern slides for use in the Y. M. C. A. "huts" abroad, the character of the slides and how to send them. (Apply to J. Horace McFarland, President of the American Civic Association, Harrisburg, Pa.)

SNOW IS A CLOG TO TRAFFIC

Its removal from city streets and the main country roads means a big saving in the cost of transporting goods.

There is but one way to remove snow quickly, conveniently and economically from city streets and country roads, and that is by using a

CHAMPION SNOW PLOW

attached to a motor truck.



THE CHAMPION SNOW PLOW

Can be attached to any standard truck. Easily operated by one man. Built thoroughly of the best materials, it will stand extraordinary strain in clearing snow from highways.

Write to-day for Bulletin K. D. T. Don't delay. Snow is likely to be here any time. It is always well to be prepared.

The Good Roads Machinery Company

KENNETT SQUARE, PA.

Methods · Materials · Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings



A GROUP OF ABLE WOMEN WAR WORKERS IN THE PLANT OF THE MINNEAPOLIS STEEL AND MACHINERY COMPANY

Women as War Workers

The accompanying photograph shows a oup of workers who, with about 70 other omen, operate machines that turn out tractor rts in the Minneapolis Steel & Machinery ompany's plant. While they are drawn from classes, they are on the same level in the ops, all working with a common interest. W. Mellis, of this company, who sends this formation to THE AMERICAN CITY, states at women are proving themselves very aptable and quick to learn in industrial ork. These women have relieved many men r military service, and are representative of e war-time evolution of women.

✣ ✣

. W. Clark Company ebuilding Plant

The H. W. Clark Company, of Mattoon, Ill., anufacturers of the Clark meter box and ater-works appliances, announces the re-ilding of its factory, which was totally de-royed by the tornado which visited Mattoon st year. The new plant is being built on the d site in Mattoon, and will be most modern in every respect, being substantially constructed of brick, stone, concrete and steel. Thruout the plant the steel sash daylight construction is being used. Great care and attention is being given to the reduction to a minimum of unproductive travel, the raw material coming in at one end of the plant and the finished product going out at the opposite end.

The entire big molding floor will be supplied with electrically-driven overhead trolley conveyors for handling the molten metal and the rough castings from the sand. The yard and the remainder of the entire plant will be equipped with overhead trolleys and with industrial tracks. The charging floor of the cupola is of steel and reinforced concrete, thus being fireproof. New patterns and flasks of the most modern construction and specially constructed molding machines will be included in the equipment.

✣ ✣

Industrial Organizations Fighting Influenza

Prominent among the industrial plants which have used special precautions in guard-

Clear the Streets
This Winter With
THE Martin
O.D.&G.CO. REGISTERED

Snow Remover

With the spread of Spanish Influenza it's up to the authorities of every city and community to do everything in their power to conserve the public health. You, the city engineers and city managers, are responsible for the health of the city's people. What better way of preventing colds that end in pneumonia than by keeping the streets clean, well drained and the sidewalks clear of snow, slush and mud? The Martin will do the trick. Will make a healthful town out of your town quicker than you would ever think it could be accomplished. One Martin in your town this winter may be the primary means of saving, say, five lives. What are five lives worth? What is one worth—**yours,** for instance? The value of such service as is rendered by the Martin cannot be reckoned in money—and yet with all that, the Martin is a most inexpensive little machine. **It does the work. The Martin will do more work than one hundred or more men with shovels—Saves a world of expensive labor and does the work rapidly.**

Snow Remover in Winter—Ditcher and Road Grader in Summer. The Martin Is Useful the Year Around

10 Days' Free Trial

If the Martin fails to do all we claim for it after a fair try-out of 10 days, return it by freight at our expense and we will refund your money.

Write for Book and Prices

Learn all about the Martin and what it will do in snow, slush, mud—in winter and in summer. In city, town and country.

Owensboro Ditcher & Grader Co.

Box 100 Owensboro, Kentucky

Martin No. 20 Reversible Adjustable



ing against influenza is the S. F. Bowser & Company oil tank and pump works. The officials have organized a health campaign for the benefit of all employes, as well as for the good of the city itself. Stations have been installed about the plant buildings which are easily accessible to all, and every employe of the big works is requested and expected to have his or her nose and throat sprayed at least twice daily.

As a further precaution, employes have been sworn in as deputy health commissioners, with full power to enforce all rules and laws of the health department. It is their duty to take action (drastic if necessary) to prevent the spread of the disease thru spitting, coughing or sneezing, and to report all cases, however slight.

All spittoons of any kind have been removed, as one of the common mediums of transmitting the germs of influenza is thru spitting. All employes are also requested to refrain from spitting on the premises.

Employes of the factory and office have been instructed to report all cases to the deputies. Any employe showing the slightest symptoms will be sent home immediately. The employes are all responding with a will to the treatments, realizing that everything is being done to insure their health and keep them at their different tasks which are so essential in the maintenance of the war.

✣ ✣

Heavy-Duty Trucks With Double Reduction Gear Drive

New models of three- and five-ton White trucks having, among other improvements, a double reduction gear drive, have been announced by The White Company, Cleveland.

The new design of rear axle, doing away with side driving chains, is of especial interest to truck users, because, in addition to showing the solution of an important engineering problem, the design retains the advantages of chain drive and adds advantages of its own which produce greater efficiency. This, the company states, is the only result that justifies changes in design.

As long ago as three years, the company announced in a published statement that its heavy-duty trucks would continue to be chain-driven until a better form of final drive were developed. In announcing the double reduction gear drive, the company states: "The double reduction principle has been a large factor in the efficiency of White 1½-2-ton trucks, so widely used in both commercial and military service. It has long been an engineering problem to apply this principle to shaft-driven, heavy-duty trucks, and the new White models show that it has been accomplished without using a large axle housing, without an auxiliary axle, without increasing unsprung weight and without sacrificing simplicity."

In addition to this new drive system, the company has made improvements and refinements in a number of features, among which are a unit power plant which is an evolution of the White monobloc engine, a cast radiator of the vertical tube type with removable head, and a new system of brakes.

From experience with the new series of heavy-duty trucks in actual service, The White Company feels that truck performance has been raised to a new level of efficiency and economy. There is greater strength, simplicity and durability, combined with higher efficiency in developing and utilizing power.

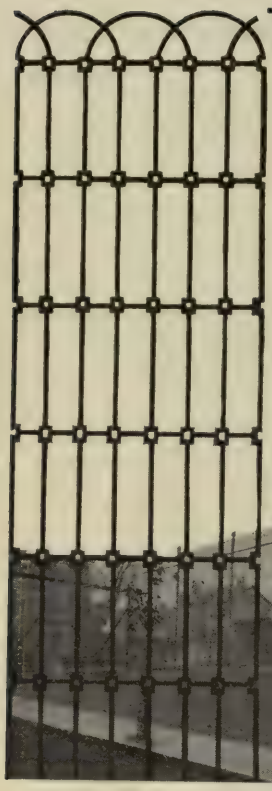
✣ ✣

Staff Additions

The Barber-Greene Company, of Aurora, Ill., announces the strengthening of its organization as follows: Mr. F. E. Smith, chief engineer, formerly of the engineering depart-



WHITE HEAVY-DUTY TRUCK WITH DOUBLE REDUCTION GEAR DRIVE



Protect Your Future Citizens

Playgrounds—breathing space, children must have. Prote
them while at play with an

"EXCELSIOR" TRADE MARK RUST PROOF **FENCE**

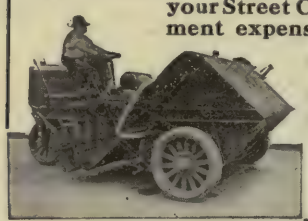
Woven of heavy steel wires; held securely together by the EXCELSIOR p
ented steel clamp. Galvanized AFTER making which makes it rust proof
well as firmly solders it together. Of pleasing design, economical, long-lasti
For beautifying public grounds of any nature, use Excelsior Rust Proof Fen
as well as flower bed guards, tree guards, trellises, gates, etc. Write for ill
trated catalog G. The illustration below shows
an installation at Providence, R. I.

WRIGHT WIRE COMPANY
Worcester, Mass.



The ELGIN

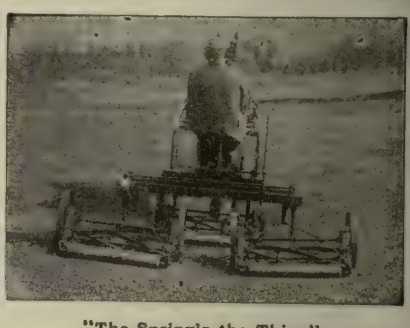
The machine that sprays the street, sweeps it, and collects the sweepings. Driven by motor. Cuts a big slice off your Street Cleaning Department expenses.



Write for illustrated matter.

ELGIN SALES CORPORATION
NEW YORK
and CHICAGO

UNIVERSALLY ADOPTED



"The Spring's the Thing"
SHAWNEE MOWER CO., 5 Beekman St., N. Y

CUT COSTS 1/2

On All Dirt Moving Jobs

Put a Spaulding Road Machine to work on your jobs. **It takes place of 4 wheel scrapers—moves dirt with half the expense** of any old-fashioned methods. Loads from **unplowed ground** and **puts on 1 1-2 yds. dirt in 30 seconds.** Will spread dirt or dump in piles as desired. One man and 4 horses—or two men and a tractor—handle it. Light running—simple to operate—dependable. Write for full information **now.**

Spaulding Mfg. Co.
Grinnell, Iowa
Dept. 240



SPAULDING 2-IN-1 ROAD MACHINE

FIRST

Get Bulletin 250—or, wire

ZELNICKER IN ST. LOUIS

Before buying or selling

RAILS

LOCOMOTIVES—CARS—TANKS
MACHINERY, PILING, ETC.

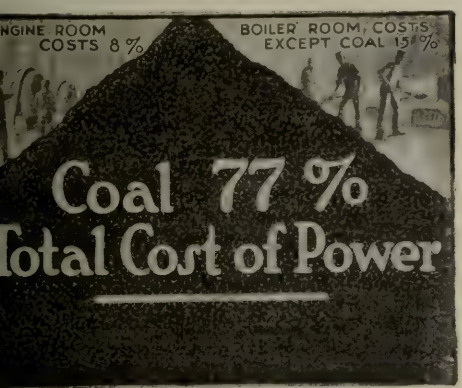
What have you for sale?

ent of the Stephens-Adamson Manufactur-g Company, of the Granby Mining & Smelt-g Company, and the American Zinc & Chem-al Company; Mr. George C. Sanford, super-tendent, formerly of the Elevator Supplies mpany and of the Otis Elevator Company.

✣ ✣

he Steam Flow Meter as a uide to Boiler Economy

Because coal is 77 per cent of the total cost power, the need to be efficient in its use is perative. The General Electric Company ates that the installation of a steam flow eter on each boiler will prevent avoidable astes.

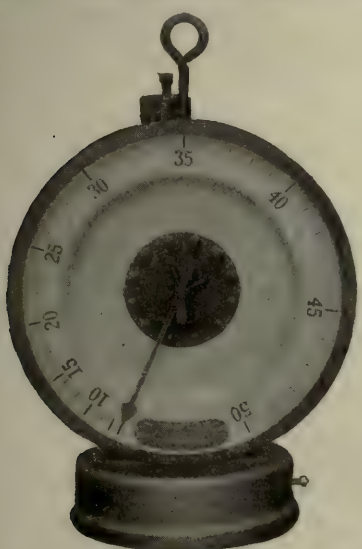


COAL BULKS LARGELY IN THE COST OF POWER

The information given by a steam flow eter must not be confused with that given by pressure gauge. In the former case the in-cation or record obtained represents the am output of the boiler in boiler H. P. or unds per hour, while in the latter the indica-tion or record is the pressure at the point where the gauge is connected. The information given by a steam flow meter may be compared to that given by an ammeter, and the information given by the pressure gauge to that given by a voltmeter.

Under any system of boiler management it is necessary to maintain the proper steam pressure. Should the steam pressure drop, the steam flow meter will show whether the pressure drop is caused by a sudden decrease in the steaming rate of one or more of the boilers or by an increase in the load. The meter is a working guide for the fireman.

Two types of meters are offered by the General Electric Company, of Schenectady, N. Y., one of which indicates the steam flow, while the other records as well as indicates. The indicating scale is 18 inches in diameter, with the figures 7/8-inch in height, so that they may be easily read at a considerable distance. The chart of the recording meter on which the graphic record of the steam output is made is 12 inches in diameter, with the time and flow lines plainly marked.

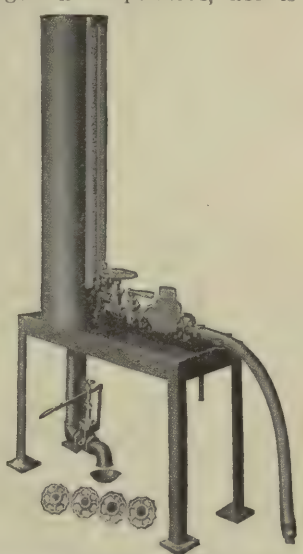


INDICATING BOILER FLOW METER

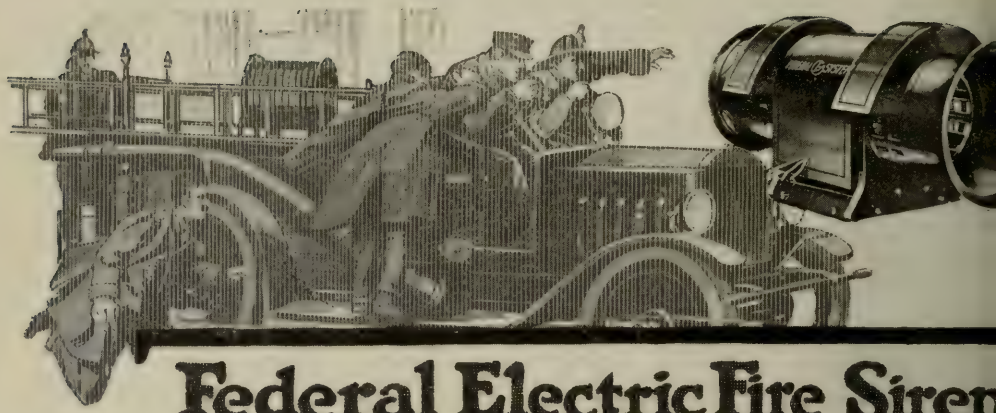
✣ ✣

A Water Meter Prover

A water meter prover is a valuable addition to the equipment of any water-works. The Keystone water meter prover shown on this page measures volumes and shows the percentage of inaccuracy without any calculation. No constants are required to correct the result for changes in temperature, nor is there a complicated scale to adjust. The outlet is controlled by a 2-inch quick-acting valve, permitting rapid emptying. The inlet is also controlled by a quick-acting valve, and ahead of this valve is a very accurately made orifice valve with wheel. The wheel is large, and by suitable notches can be set to deliver any flow



THIS MACHINE TESTS THE ACCURACY OF YOUR METERS



Federal Electric Fire Siren

That Weird Penetrating Screech Brings Men Out Quic

More men on to start from the Fire House. Every man of the force awake and "o job." Hundreds of cities have increased the efficiency of their fire departments by inst Federal Electric Fire Sirens. Their distinctive, far reaching note means FIRE to one, and everyone hears it, night or day, for miles around.

Please Send me list of towns using Federal Sirens and all information.

Sounds instantly at the touch of the switch from any desired points. Cost for c consumed averages $1.50 per year—no other maintenance expense.

Send coupon for full particulars.

Name.....

Address.....A C

FEDERAL SIGN SYSTEM (Electric)

Lake & Desplaines Sts., Chicago

Branches in All Large Cities

UNITED STATES RUBBER COMPANY — US — RUBBER SYSTEM — AND ASSOCIATED COMPANIES

United States Truck Tires

'Nobby Cord' Pneumatic Truck Tire

Are Good Tires

SOLID TRUCK TIRES

Loper Fire Alarm C

STONINGTON, CONN.

Manufacturers of

Compressed Air Fire Whistl

Whistle Blowers

Bell Strikers, Boxes, Gong

Etc., Etc.

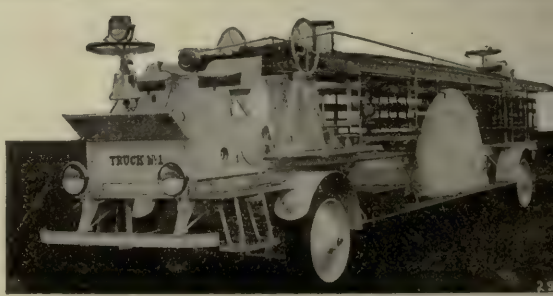
Estimates Cheerfully Given

Four-Wheel Drive Aerial Ladder Truck

Pneumatic Air Hoist
Automatic Ladder Lock

One man puts the ladders where you want them. No More Cranking.

Write for free booklet and list of users



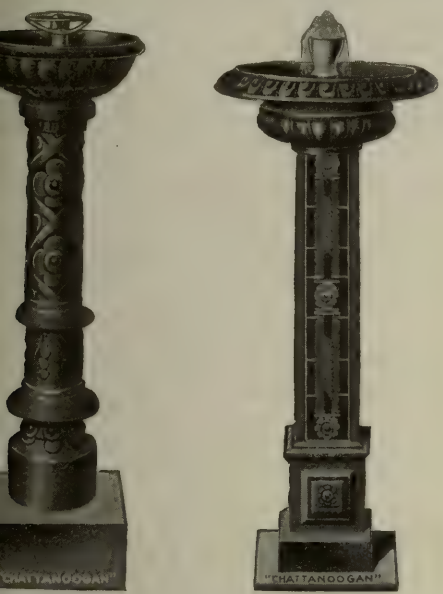
COUPLE-GEAR FREIGHT-WHEEL CO., 525 Buchanan Ave., GRAND RAPIDS, MI

t exceeding a 1-inch orifice. The tank is ade of copper and will not rust. The workanship and accuracy of these provers are aranteed by the Pittsburgh Meter Company, East Pittsburgh, Pa.

✣ ✣

re Water for the Public

Sanitary fountains have long been recoged as a necessary safeguard in supplying nking water for the public. Two attrace models suitable for use in schools, public ildings, factories and parks are manufaced by the Casey-Hedges Company, of Chatooga, Tenn. In the one, the water flows



TWO TYPES OF SANITARY DRINKING FOUNTAINS

stantly in a regulated volume, which can be off entirely or graduated to full pressure. e other is equipped with a sensitive ring , which supplies the water under slight ssure. Upon the release of the ring, the ply is automatically cut off and prevents te of water. Both of these models are strated herewith.

✣ ✣

nch Office Discontinued on count of the War

n account of the demands made upon its ce for war purposes, the Electro Bleaching Company, of 16 East Forty-first Street, v York, manufacturers of liquid chlorine, been obliged to discontinue its Chicago e. G. R. Ellis, who has been in charge of portion of the business, has been transed to the company's plant at Niagara Falls, re he has been placed in charge of the e work.

Zelnicker Supply Company Makes New Appointments

The Walter A. Zelnicker Supply Company, of St. Louis, announces the appointment of R. H. Wilson as assistant to the president of the company, with office at St. Louis. Mr. Wilson, who has been with the company for years, was the Houston representative. His position has been filled by E. O. Griffin.

✣ ✣

Poured-Joint Sewer Installations

The Flex-Form mold, hitherto urged chiefly as a means of joining house drains and house sewers, is now being applied to large sewer installations. The first molds to be used for a 24-inch sewer have been completed and tested with good results.

The picture shows the inventor, De Witt H. Wyatt, of Columbus, Ohio, with an adjustable form suitable for any size of vitrified pipe from 18 to 24 inches in diameter. It also



POURING A TEST JOINT WITH A FLEX-FORM MOLD

shows a test joint poured with a bituminous compound.

The Sewer Pipe Manufacturers' Association, which is urging the substitution of poured joints for hand-troweled joints, believes that a new standard of imperviousness for sewer joints can thus be established, practically eliminating seepage from sewers and greatly reducing engineers' present estimates of allowable infiltration of ground water. Infiltration, they say, will soon be a thing of the past on poured-joint installations.



When Victory Is Won and the Boys Come Hon

What kind of a reception will your city give them?

A triumphant parade and public acclamation of course.

But what will they do when the shouting is over?

Will your city be really ready for them?

Will plans have been made for reassimilating them into business and community life

Will there be temporary employment in public works for any whose old jobs are immediately available?

Will those capable of doing more important work than they left be given opportuni for education and training?

Will a study have been made of how to overcome local handicaps to your city's deve ment and how best to stimulate industrial and civic progress during the pe of keen competition that will follow the war?

Will there be housing accommodations worthy of men who have won victory for dem racy?

Will your city and your factories offer sanitary conditions equal or superior to thos the camps?

Will there be facilities for wholesome recreation such as many of the camp cities afford

Will plans have been made in your city for a "Liberty Building" as a community ce and memorial of the great war?

Will your state legislature and city council have enacted laws and ordinances, wh necessary, to secure prompt and wise action in meeting after-war problems?

Will provision have been made for raising the increased municipal revenues essentia future progress and prosperity?

In short, will the boys whose big adventures have made them impatient of petty thi feel like leaving your city again in search of enterprise, aggressiveness, dri energy?

Who will be the leader in this work of assimilation and reconstruction?

Will the Chamber of Commerce rise to its opportunity?

ESIDENT WILSON SAYS:

"After the war there will be urgent need not only for trained leadership in all lines of industrial, commercial, social, and civic life, but for a very high average of intelligence and preparation on the part of all the people."

your Chamber of Commerce side-step the issue? and will your city, as a result, fail to advance as it might in the post-war march of progress? Or,

it be strong enough and wise enough to have a real voice in solving national, state and local problems in the critical days ahead?

AT YOUR CHAMBER OF COMMERCE

y answer "yes" to the latter question, it must have:

1. A program adapted to the reconstruction period.
2. The confidence of the community at large.
3. Adequate assured income.
4. A membership broadly representative, and inspired by a spirit of service.
5. Efficient organization and proper machinery.

your Chamber of Commerce be thus equipped, in members, money and program, to follow our military victory abroad with industrial and civic victories at home?

E AMERICAN CITY BUREAU CAN HELP YOU TO GIVE AN AFFIRMATIVE ANSWER.

Since the world war started, four years ago, The American City Bureau and Town Development Company have directed reorganization or expansion campaigns for Chambers of Commerce and other commercial and civic bodies in more than— cities. The consolidated company is now equipped to handle an average of six such campaigns each month. An exhaustive study is being made of after-war problems, and specialists are available for surveys and propaganda.

ing the closing months of the war and the first months of peace the demand for such services is likely to exceed the supply of men trained for the work. Prompt requests are, therefore, desirable from organizations wishing to consider consultation or expansion.



AMERICAN CITY BUREAU

With which is merged the Town Development Company

Tribune Building, New York

Date.....

rican City Bureau
Tribune Building, New York

Without obligation on our part, please tell us what service you are prepared to render in:
An expansion campaign for our organization.
A special study and report on local problems in relation to after-war conditions.

Name.....

Organization.....

Address.....

This Boy Needs a Playground

Read the answer by the

GOVERNOR OF INDIANA

In the keynote speech at the last state political convention:

"Many of the defects which disqualify our young men could easily have been prevented by adequate attention in childhood, by proper housing, AMPLE PLAYGROUNDS, sunlight and fresh air, and by SYSTEMATIC and ENFORCED PHYSICAL EXERCISE in our schools. * * * This is a matter for the state and not for the individual, as the state is most vitally concerned in the physical well-being of its citizens. Provision should be made by the state * * * * requiring that a part of each school day be set apart for physical education and training."



LET "FUN-FUL" APPARATUS ASSIST YOU.

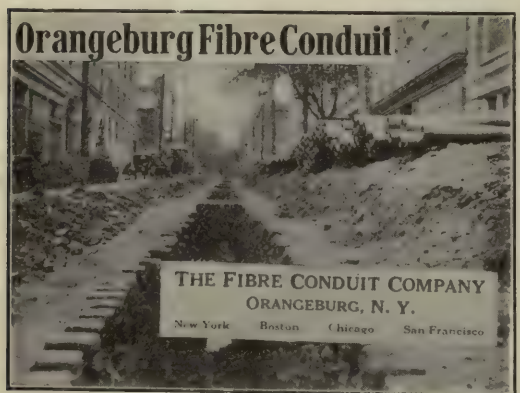
"Everything for the Playground"

Send for catalog today.

Hill=Standard Co.

216 Fun-Ful Avenue, Anderson, Indiana

Orangeburg Fibre Conduit



BUFF

ENGINEERING INSTRUMENTS

are the strongest, most accurate and longest-lived Instruments built. The close accuracy, high grade materials and superior workmanship have made the Buff the recognized standard. *Write for catalog No. 4.*



BUFF & BUFF MFG. CO. Jamaica Plains, BOSTON, MASS.

221 Lamartine Street 231 N. Wells Street, Chicago, Ill.



GET SNOW MOVERS NOW!!

Avoid freight delays. Order early.

BAKER

AUTO TRUCK SNOW PLOWS

Made to fit any make truck. Attached quickly. Used by large cities, parks, factories, etc. Ask also about our famous 20th Century Sidewalk Snow Plow. *Send for information today.*

The Baker Mfg. Co., 503 Stanford Ave., Springfield, Ill.

Playground Equipment

Give the children a chance to play right, on safe apparatus, especially devised and constructed for the purpose, away from danger. Equip your playground with

"APEX" APPARATUS

MANUFACTURED BY

HOWARD GEORGE, Philadelphia, Pa.

Estimates for large or small playgrounds cheerfully furnished. Send for catalogue.

ANDORRA-GROWN SHADE TREES

For Street or Lawn

Our ability to supply plants of the highest quality is not curtailed by the stoppage of foreign shipments. 600 acres of home grown stock for your selection.

Andorra Nurseries

Wm. Warner Harper, Prop.

Box 20
Chestnut Hill
Phila., Penna.

Suggestions for Effective Planting on request.

REPUBLIC FIRE HOSE

Fire chiefs generally recognize the superior wearing qualities of Republic Fire Hose, which has made good in the hardest kind of service.

REPUBLIC RUBBER CORPORATION

Youngstown, Ohio

IMITATION REEDS and RAFFIA SUBSTITUTES

for

Kindergarten and Playground Work

Correspondence requested with School Supply Houses

THOMAS B. MEEHAN CO. DRESHER, PA.

ALL MUNICIPALITIES NEED PLAYGROUNDS



The Playground not only betters the physical and moral tone of a city, but it is a real live investment. It cuts the perpetual moving population to a minimum which saves your manufacturer and your merchant.

American Apparatus will produce results.

WRITE FOR OUR CATALOGUE TO-DAY

AMERICAN PLAYGROUND DEVICE CO., W. 25th St., Anderson, Ind.

A Last Chance

On November 15 the Survey raises its price to $4 a year.

But not only is the *price* increased. The *value* of the Survey has increased and will keep on increasing during these years of war and reconstruction when social and industrial issues play so large a part in world affairs.

The Survey is prepared to deal with these issues fully and expertly. Edward T. Devine is back from France re-added to the Survey Staff as a regular weekly contributor. Dr. George M. Price, former director of the Board of Sanitary Control, is now in charge of the Survey's department on public health. Special attention will be given to the labor movement at home and abroad.

Subscribe to the Survey NOW at $3.

Smile at the chap who discovers too late he can't get along without

THE SURVEY
Journal of Social Work
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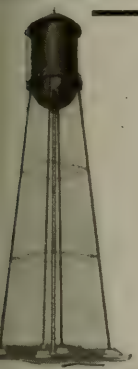
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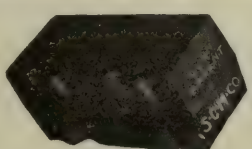
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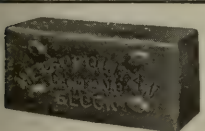
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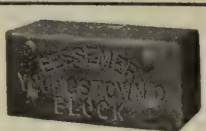
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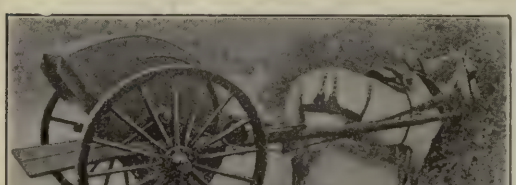
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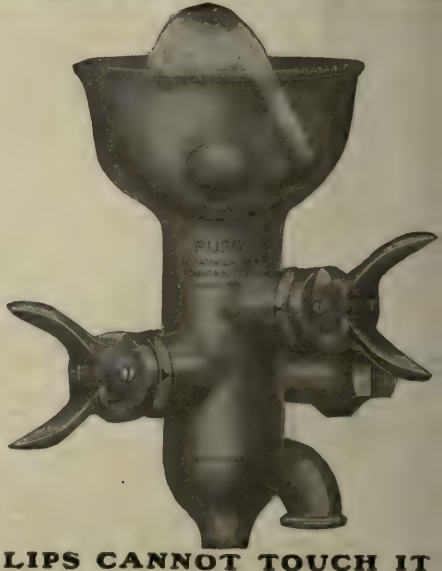
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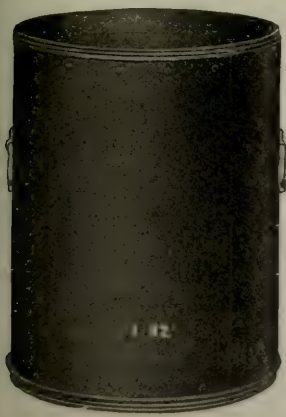
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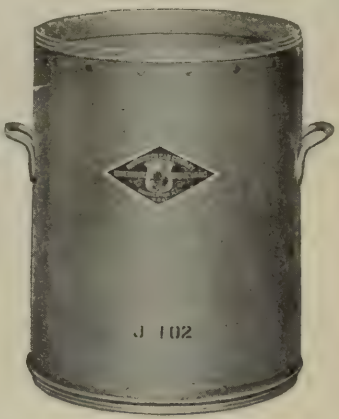
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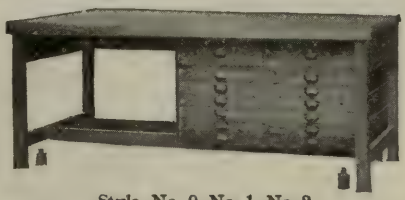
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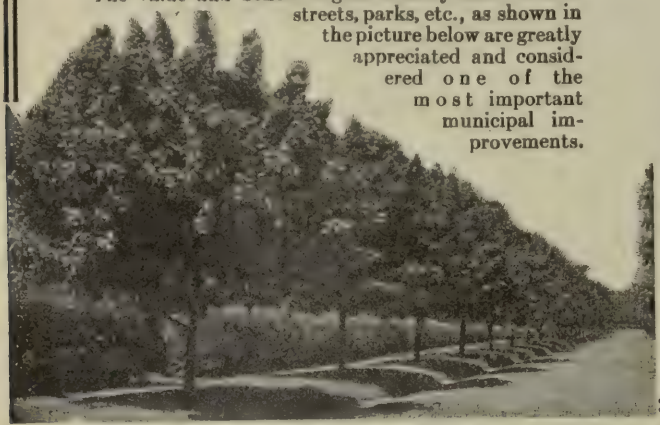
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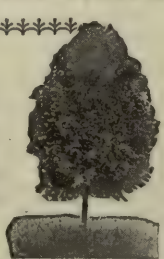
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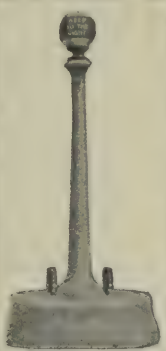


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Municipal, Community and Civic Problems
Pittsburgh, Penna.

J. L. LUDLOW
Winston-Salem, N. C.
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Sanitary and Civic Expert
Water Supplies, Sewage Disposal, Reports, Plans, Valuations, Appraisals. Efficiency and Economy Studies, Physical and Financial Reports on Public Utilities in Southern Cities. Advice in Municipal Sanitation and Public Health. Interviews by appointment in Eastern Cities.

EDWIN A. MacKRELL, C.E.
NASHUA, N. H.
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Topographical and Railway Surveys.

THOMAS MEEHAN & SONS
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Especially qualified for work involving use of hardy plants. Large estate developments: country clubs. Plans executed.
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Main Office, Kansas City.
New York Office, 35 Nassau Street.

GARBAGE AND REFUSE INCINERATOR

OFFICE OF THE MAYOR OF SAN JUAN, PORTO RICO

San Juan, P. R., August 20, 1918.

Sealed proposals will be received by the Commission of Awards at the office of the Mayor, Ayuntamiento Building, City of San Juan, P. R., until 10 a. m. o'clock on November 25th, 1918, for the construction and installation of a Garbage and Refuse Incinerator Plant, at Miramar, San Juan, P. R.

At the above place and time the bids will be publicly opened and read. Instructions to bidders, topographical plan of site and work, and general specifications, can be obtained either from the City Engineer, San Juan, P. R., or from the Bureau of Insular Affairs, War Department, Washington, D. C.

The right is reserved to reject any and all bids.

R. H. TODD,
Mayor of San Juan, P. R.

The Municipal Buyers' Guide

A classified reference index of advertisers in this issue of The American Cit

The alphabetical index of advertisers which follows this list (see page 88) will give yo the page numbers of all advertisements, thus enabling you to secure the full address of th advertisers, as well as other information which may be of value.

Every name in this list is represented by an advertisement in this issue of THE AMERICA CITY. The alphabetical index to all advertisements follows this classified list. See page 8

Aerial Ladder Trucks.
Couple-Gear Freight-Wheel Co.

Air Compressors.
Fairbanks, Morse & Co.
General Electric Co.
Water Works Equipment Co.
Worthington Pump & Mach. Corp.

Air and Gas Washers.
Spray Engineering Co.

Ambulances.
Studebaker
White Co., The.

Antoxide.
E. I. Du Pont de Nemours & Co.

Arc Lamps.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Asbestos.
Carey Co., Philip.

Asphalt.
Carey Co., Philip.
Standard Oil Co.
Warren Bros. Co.

Asphalt Machinery.
Casey-Hedges Co.
Connery & Co., Inc.
Erie Machine Shops
Littleford Bros.
Warren Bros. Co.

Automobile Fire Apparatus.
American-La France Fire Engine Co.
Couple-Gear Freight-Wheel Co.
Federal Motor Truck Co.
Garford Motor Truck Co.
Studebaker
White Co., The

Automobile Lubricants.
Joseph Dixon Crucible Co.

Belt Dressing.
Joseph Dixon Crucible Co.

Blasting Supplies.
DuPont de Nemours & Co., E. I.

Blue Print Paper and Machines.
Kolesch & Co.

Braces, Extension.
Bond & Co., Harold L.

Brass Goods.
Clark Co., H. W.
Smith Co., A. P.
Union Water Meter Co.
Water Works Equipment Co.

Brick, For Paving.
Dee Co., Wm. E.
Metropolitan Paving Brick Co.
Southern Clay Mfg. Co.

Buses, Motor.
Studebaker
White Co., The.

Campaigns for Commercial Organizations.
American City Bureau.

Cans for Ashes and Garbage.
American Can Co.
Buffalo Municipal Equipment Co.
Newport Culvert Co.
Rochester Can Co.

Cast Iron Pipe.
Donaldson Iron Co.
Glamorgan Pipe & Foundry Co.
Lynchburg Foundry Co.
Massillon Iron and Steel Co.
U. S. Cast Iron Pipe & Fdry. Co.
Warren Foundry & Machine Co.
Zelnicker Supply Co., W. A.

Catch Basins.
Buffalo Municipal Equipment Co.
Casey-Hedges Co.
Clark Co., H. W.
Dee Co., Wm. E.
U. S. Cast Iron Pipe & Foundry Co.

Catch Basin Cleaning Apparatus.
Otterson Auto-Eductor Co.

Caulking Machinery.
Smith Co., A. P.

Caulking Materials.
Leadite Co.
United Lead Co.

Cemcoat.
Sonneborn Sons, Inc., L.

Cement.
Pennsylvania Cement Co.

Cement Inspection.
Allentown Testing Laboratories.

Centrifugal Pumps.
Fairbanks, Morse & Co.
Worthington Pump & Mach. Corp.
Yeomans Bros. Co.

Check Valves.
Columbian Iron Works.

Chemical Analysis.
Allentown Testing Laboratories.

Chemical Engines.
American-La France Fire Eng. Co.

Chemicals for Water Purification.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Electric Ozone Sterilizer Co.
Electro Bleaching Gas Co.
Great Western Electro Chem. Co.
Pennsylvania Salt Mfg. Co.
Wallace & Tiernan Co., Inc.

Continued on page 80

Coal Tar.
Carey Co., Philip.

Cold Storage and Refriger Systems.
Spray Engineering Co.

Concrete Lighting Standards
Chicago Concrete Post Co.

Concrete Mixers.
Jaeger Machine Co.
Worthington Pump & Mach.

Conduit Rods.
Bond & Co., Harold L.
Turbine Sewer Machine Co.

Conduits.
Fibre Conduit Co.

Contractors' Equipment.
Austin-Western Road Machy.
Baker Mfg. Co.
Bond Co., Harold L.
Connery & Co., Inc.
Federal Motor Truck Co.
Garford Motor Truck Co.
Good Roads Machinery Co.
Littleford Bros.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Universal Road Machinery Co

Contractors for Water Main Cl ing.
National Water Main Cleanin

Controllers, Rate.
Simplex Valve & Meter Co.

Culverts.
American Cast Iron Pipe Co.
Casey-Hedges Co.
Dee, Wm. E., Co.
Good Roads Machinery Co.
Newport Culvert Co.
U. S. Cast Iron Pipe & Foundr
Wood & Co., R. D.

Curb Boxes.
Casey-Hedges Co.
Clark Co., H. W.
S. E. T. Valve & Hydrant Co.

Current Meters.
Westinghouse Electric & Mfg.

Ditching Machinery.
Owenboro Ditcher and Grader Co.

Drawing Instruments and plies.
Economy Drawing Table Co.
Kolesch & Co.

Dump Carts and Wagons.
Austin-Western Road Machy.
Holzbog & Bro., Geo. H.
Studebaker
Watson Wagon Co.

Good Road Machinery for Good Roads

CRUSHERS SWEEPERS
ELEVATORS BIN-SCREENS
SCARIFIERS, ETC.

Write for interesting illustrated catalog

Universal Road Machinery Co.
Kingston, N. Y. Boston Harrisburg

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for paving and sidewalk work

Used by progressive municipalities and contractors.

Is your town progressive?

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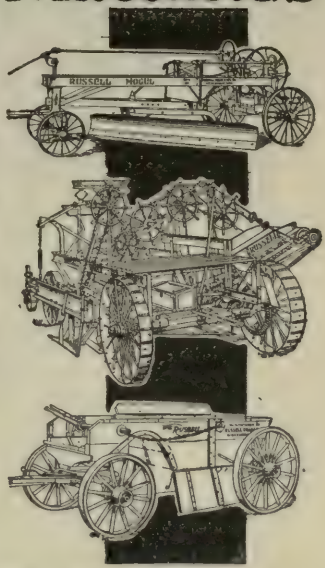
The Jaeger Machine Co.
215 West Rich Street
COLUMBUS .·. .·. .·. OHIO

Russell Road Machines

10 SIZES and STYLES of Road Graders

2 SIZES of Elevating Graders

Dump Wagons, Plows, Scrapers, Culverts, Steel-Beam Bridges



Russell Grader Mfg. Co.
Minneapolis

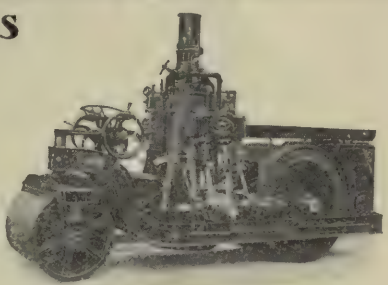
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Includes everything that makes for the best in Road Rollers. They are strong, simple in construction—durable and economical and easy to operate. Our first roller built in 1887 is still doing its "bit."

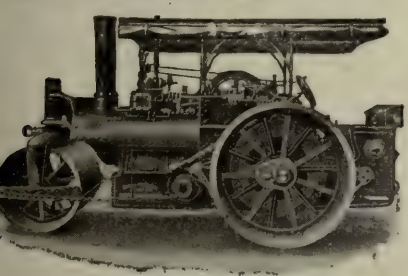
Erie Rollers are guaranteed against breakage or wear for 5 years.

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BUFFALO PITTS ROLLERS

Are purchased by discriminating buyers because of the many years of satisfactory service which they will render, the low repair costs and their general reliability.

ASK THOSE WHO OWN THEM

All sizes All Types Write for catalogue

Built only by

THE BUFFALO-SPRINGFIELD ROLLER COMPANY
SPRINGFIELD, OHIO

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 8

Dust Laying Compounds.
Semet-Solvay Co.
Standard Oil Co.

Electric Current Meters.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Generators and Motors.
Fairbanks, Morse & Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Lamps.
Cutter Co., George
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Lighting Plants.
Fairbanks, Morse & Co.

Electrical Supplies.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Enameled Iron Signs.
Baltimore Enamel & Novelty Co.

Engineers' and Surveyors' Instruments.
Buff & Buff Mfg. Co.
Kolesch & Co.

Engineers, Consulting.
Albright & Mebus.
Allentown Testing Laboratory
Alvord, John W., & Brudick, Chas.
Ballard & Co., F. W.
Birmingham Engineering Co.
Black & Veatch.
Blanchard, A. H.
Burns & McDonnell.
Caird, James M.
Chester & Fleming.
Cravath, J. R.
Dunham-Clarin Co.
Flood, Walter H.
Fuller & McClintock.
Gage, Benj. E.
Gannett, Seelye & Fleming.
Greeley, Samuel A.
Gregory, John H.
Hansen, A. E.
Harding, James.
Hazen, Whipple & Fuller.
Hering, Rudolph.
Higgins, J. Wallace.
Hopkins, Charles C.
Knowles, Morris.
Ludlow, J. L.
MacKrell, Edwin A.
Mitchell, Hugh C.
Pollock & Taber
Potter, Alexander.
Potts, Clyde.
Scofield Engineering Co.
Taylor, Henry W.
Waddell & Son

Engine, Gas. (See Gas Engines.)

Exhibition Material
Educational Exhibition Co.

Expansion Joint Material.
Carey Co., Philip.

Fencing.
Barnum Iron Works, E. T.
Enterprise Iron Works.
Wright Wire Co.

Fertilizers.
Dreer, Henry A.

Filing Cabinets.
Economy Drawing Table Co.

Filters-Feed Water.
Pittsburgh Filter Mfg. Co.

Filtration Plants.
N. Y. Continental-Jewell Filtra. Co.
Norwood Engineering Co.
Pittsburgh Filter Mfg. Co.

Fire Alarm Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Fire Alarm Signals, Electric.
Federal Sign System

Fire Alarm Signals, Steam.
Union Water Meter Co.

Fire Alarm Systems.
Gamewell Fire Alarm Telegraph Co.
Loper Fire Alarm Co.

Fire Department Apparatus.
American-LaFrance Fire Engine Co.
Couple-Gear Freight-Wheel Co.
Federal Motor Truck Co.
Garford Motor Truck Co.
South Bend Motor Car Works.
Studebaker.
White Co., The.

Fire Escapes.
Barnum Iron Works, E. T.

Fire Extinguishers, Chemical.
American-LaFrance Fire Engine Co.

Fire Hose.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Co., B. F.
Republic Rubber Co.

Fire Pumps.
Fairbanks, Morse & Co.
Worthington Pump and Machinery Corporation.

Flag Poles.
Barnum Iron Works, E. T.

Flexible Joints.
U. S. Cast Iron Pipe & Fdry. Co.

Flower Bed Guards.
Barnum Iron Works, E. T.
Wright Wire Co.

Fountains.
Barnum Iron & Wire Works, E. T.
Casey-Hedges Co.
Puro Sanitary Drinking Foun. Co.
Rundle-Spence Mfg. Co.

Furnaces, Melting.
Leadite Co.

Garbage Cans—See Cans for Ashes and Garbage.

Garbage Wagons.
Austin-Western Road Machy. Co.
Federal Motor Truck Co.
Garford Motor Truck Co.
Holzbog & Bro., Geo. H.
Studebaker.
Watson Wagon Co.
White Co., The.

Gas Engines.
Fairbanks, Morse & Co.
Foos Gas Engine Co.
Westinghouse Electric & Mfg. Co.
Worthington Pump & Mach. Corp.

Gaskets.
Leadite Co.

Gas Meters.
General Electric Co.
Pittsburgh Meter Co.

Gasoline Pumping Engines.
Bond Co., Harold L.
Fairbanks, Morse & Co.
Worthington Pump & Mach. C

Gasoline Storage Tanks.
Bowser & Co., Inc., S. F.

Gates For Parks and Cemeteri
Barnum Iron Works, E. T.
Enterprise Iron Works.
Wright Wire Co.

Gauges, Loss of Head, Rate of F
Simplex Valve & Meter Co.

Gauges—Surface, Reservoir Special Water Works.
Clark Co., H. W.
Simplex Valve & Meter Co.

Graders.
Austin-Western Road Machy.
Owenboro Ditcher and Grader
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Graphite.
Dixon Crucible Co., Joseph.

Grass Seed.
Burpee Co., W. Atlee.
Dreer, Henry A.
Thorburn & Co., J. M.

Health and Amusement Devic
American Playground Device
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Heating Kettles.
Connery & Co., Inc.

High Pressure Hydrants.
Smith Co., A. P.

Hoists.
Fairbanks, Morse & Co.

Hose.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Co., B. F.
Republic Rubber Co.

House Numbers.
Baltimore Enamel & Novelty C
Buffalo Municipal Equipment

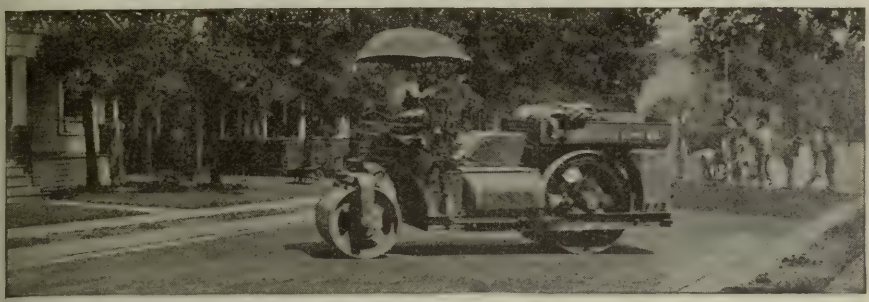
Hydrants.
Columbian Iron Works.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Ludlow Valve Mfg. Co.
Norwood Engineering Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.
S. E. T. Valve & Hydrant Co.
Smith Co., A. P.
Wood & Co., R. D.

Indicator Posts.
Columbian Iron Works.
Flower-Stephens Mfg. Co.
Ludlow Valve Mfg. Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.

Insulating Materials.
Carey Co., Philip.
General Electric Co.
Westinghouse Electric & Mfg. C

Insulated Wire and Cable.
General Electric Co.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Continued on page 82



AUSTIN-LAID ASPHALT MEANS UNIFORM STREET SURFACES

Steady running of Austin Tandem Rollers leaves asphalt or bituminous street surfaces even —no series of small waves or depressions.

Besides, there is no smoke, no steam or coal gases, no danger of fire by sparks.

Using gasoline, kerosene or distillate, Austin Tandem Rollers materially cut operating costs—do 25% more work than any other type.

Send for the Austin Roller Catalog.

There is Austin-Western time and labor-saving machinery for every stage of road-making and maintenance, whether crushing and handling rock, scarifying, grading, rolling, oiling, sprinkling, sweeping, or conveying and hauling materials.

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Engineers

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SAVE YOUR ROADS AND PREVENT DUST

The road surface will remain smooth, firmly packed and free from dust without sprinkling even in the hottest and driest weather if

SOLVAY **Granulated CALCIUM CHLORIDE**

is used. Sown dry by inexpensive horse distributor or hand spreader, Calcium Chloride upon exposure to the air absorbs moisture and causes the road surface to pack firmly. Two applications a season will keep roads and streets cool, clean, dustless and wear-resisting at a moderately low cost.

Solvay is odorless and stainless, and does not discolor the road surface. It has no objectionable features, and in working into the road aids in the natural cementing of rock and soil.

You will find this treatment by far the most permanently efficient road binder and dust preventive.

Write for illustrated Road Book

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410 Milton Ave. Solvay, N. Y.

BUY WAR SAVINGS STAMPS!

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Jail Cells and Jail Work.
Barnum Iron Works, E. T.

Joints, Flexible.
Coldwell-Wilcox Co.

Kettles, Tar and Asphalt.
Connery & Co., Inc.

Landscape Architects.
Arnold, Sheffield A.
Arnold & Tripp.
Cole, Louis S.
Cowell, Arthur W.
Cullen, Wm. E.
Davey Tree Expert Co.
Helder, Arthur H.
Higgins, J. Wallace.

Lapidolith.
Sonneborn Sons, Inc., L.

Lawn Mowers.
Austin Western Road Machy. Co.
Pennsylvania Lawn Mower Works.
Shawnee Mower Co.

Lawn Sweepers.
Everwear Mfg. Co.
Pennsylvania Lawn Mower Co.

Lead Furnaces & Caulking Tools.
Smith, A. P.
Water Works Equipment Co.

Leadite.
Leadite Co.

Lead Wool.
United Lead Co.

Leak Finders.
Clark & Co., H. W.
Pitometer Co.
Water Works Equipment Co.

Liquid Chlorine.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Electro Bleaching Gas Co.
Great Western Electro Chem. Co.
Pennsylvania Salt Co.
Wallace & Tiernan Co., Inc

Lighting Standards.
Casey-Hedges Co.
Chicago Concrete Post Co.
Cutter Co., George.
Electric Railway Equipment Co.

Lubricants.
Dixon Crucible Co., Joseph.

Manhole Covers.
Barnum Iron Works, E. T.
Casey-Hedges Co.
Clark Co., H. W.
Columbian Iron Works.
S. E. T. Valve & Hydrant Co.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Merry-Go-Rounds.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Metal Preservatives.
Dixon Crucible Co., Joseph.
Harrisons, Inc.

Meter Books.
Buffalo Meter Co.
Pittsburgh Meter Co.

Meter Boxes.
Buffalo Meter Co.
Casey-Hedges Co.
Clark Co., H. W.
Columbian Iron Works.
Ford Meter Box Co.
Hersey Mfg. Co.
McNutt, Lewis
Pittsburgh Meter Co.
S. E. T. Valve & Hydrant Co.

Meter Couplings.
Clark Co., H. W.
Ford Meter Box Co.
M Nutt, Lewis
Pittsburgh Meter Co.

Meter Holding Devices.
Ford Meter Box Co.
McNutt, Lewis

Meter Testers.
Buffalo Meter Co.
Clark Co., H. W.
Ford Meter Box Co.
Neptune Meter Co.
Pittsburgh Meter Co.

Meters—See Water and Gas Meters.

Motor Trucks.
Couple-Gear Freight-Wheel Co.
Federal Motor Truck Co.
Garford Motor Truck Co.
Studebaker.
White Co., The.

Motor Fire Apparatus—See Automobile Fire Apparatus.

Motor Truck Trailers.
Watson Wagon Co.

Nurseries.
Andorra Nurseries.
Bobbink & Atkins.
Donaldson Co.
Dreer, Henry A.
Harrison Nursery Co.
Hicks Nurseries.
Kohankie & Son, Henry.
Meehan Co., Thomas.
Riverview Nursery & Seed Co.
Smith Co., W. & T.
Storrs & Harrison Co.

Oil Engines.
Fairbanks, Morse & Co.

Oil Tanks.
Chicago Bridge and Iron Works.
Connery & Co., Inc.

Ornamental Metal Fencing.
Barnum Iron & Wire Works, E. T.
Wright Wire Co.

Packing.
Carey Co., Philip.

Paint, Preservative.
Sonneborn Sons, Inc.
E. I. Du Pont de Nemours & Co.
Dixon Crucible Co., Joseph.

Paint Gun (Pneumatic).
Spray Engineering Co.

Park Benches.
American Playground Device
Barnum Iron & Wire Works,
Casey-Hedges Co.
Enterprise Iron Works.

Park and Lawn Sprinklers.
Spray Engineering Co.

Paving Inspection.
Allentown Testing Laborator

Paving Machinery and Tools
Erie Machine Shops
Warren Bros. Co.

Paving Materials. (See also Brick and Cement.)
Carey Co., Philip.
Standard Oil Co.
Warren Bros. Co.

Paving Mixers.
Warren Bros. Co.
Worthington Pump and Mac Corporation.

Paving Mixtures.
Standard Oil Co.

Pencils, Drafting, Office.
Dixon Crucible Co., Joseph.

Pipe.
American Cast Iron Pipe Co.
Casey-Hedges Co.
Cast Iron Pipe Pub. Bureau, McWane, Sec.
Central Foundry Co.
Clow & Sons, James B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry
Lynchburg Foundry Co.
Massillon Iron & Steel Co.
U. S. Cast Iron Pipe & Found
Warren Fdry. & Machine Co
Wood & Co., R. D.
Zelnicker Supply Co., W. A.

Pipe Covering.
Carey & Co., Philip.

Pipe Cutters.
Smith Co., A. P.
Strickler & Bros., W. W.
Water Works Equipment Co.

Pipe Joint Compound.
Dixon Crucible Co., Joseph.

Pipe Jointing Materials.
Leadite Co.
United Lead Co.
Water Works Equipment Co.

Pipe Locators.
Clark Co., H. W.
Water Works Equipment Co.

Pitch.
Carey Co., Philip.

Pitometers.
Pitometer Co., The.

Pito Tubes.
Simplex Valve & Meter Co.

Playground Apparatus.
American Playground Device
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Continued on page 84

THE STANDARD METHOD of SURFACE TREATMENT



Below is a water bonded Gravel Road treated with Stanolind Paving Asphalt at 300°F., 45 pounds pressure, applied one-half gallon to the square yard by special pressure tank wagon shown in other illustration.



One application of Stanolind Paving Asphalt on Macadam and Gravel Roads has given three years' service with practically no expense. Builds more substantial surface at half the cost of light oil treatment for three years. Can be applied on roads previously treated with Road Oil.

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(INDIANA)

72 W. Adams Street, Chicago, Ill.

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These tests are made by expert chemists of real au- iority.

Now in time of war county officials should not spend ioney experimenting—their efforts should be directed oward a standard surfacing which has already stood the est as to motor transportation and varying climatic onditions as has

WARRENITE

Trunk line highways are necessary to relieve the over- urdened railroads of the freight congestion.

Highways should be encouraged and built at once. 'ever were they more needed than at the present time

BUT

iese highways should be built of a material which will ive you a well paved highway for years to come.

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WARRENITE
The Ideal Country Road Surface
All to gain—Nothing to Lose

Write today for WARRENITE circulars, specifica- ons, and form of mixture agreement available to all ontractors and learn more about this modern ideal ountry road surface. **It is to your advantage.**



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San Francisco, Cal. — Portland, Ore. — Phoenix, Ariz.
Richmond, Va. — Nashville, Tenn. — Utica, N. Y.
St. Louis, Mo. — Winnipeg, Man. — Montreal, P. Q.
Toronto, Ont. — Vancouver, B. C.

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Sluice Gates and Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Columbian Iron Works.
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Snow Cleaning Machinery.
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Russell Grader Mfg. Co.
Owenboro Ditcher and Grader C

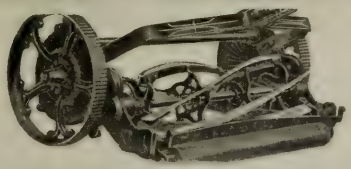
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Spray Engineering Co.

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It doesn't pay to use poor tools

That's one of the lessons experience always teaches us. And in planning your equipment for the care of golf courses, cemeteries, public parks or large estates next season—remember that the best mower is the most economical in results and in maintenance costs.

PENNSYLVANIA
Quality
Lawn Mowers

have proven easiest running, do more work per man, need fewest repairs, and are seldom out of commission.

Sold by Hardware Dealers and Seedsmen

PENNSYLVANIA LAWN MOWER WORKS
INCORPORATED
JOHN BRAUN & SONS
FOUNDED 1877 PHILADELPHIA

This trade mark is on the handles of :

"Pennsylvania"
"Pennsylvania, Jr."
"Pennsylvania Golf"
"Pennsylvania Putting Greens Mower"
"Continental"
"Great American B.B."
"Shock Absorber"
"Quaker City"
"Red Cloud B. B."
"Orchid B. B."
"Daisy"
"New Belmont"
"Bellevue"
"Panama"
"Delta B. B."
"Electra"
"Pennsylvania Pony"
"Pennsylvania Horse"
"Pennsylvania Grand Horse"
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Street Cleaners Carts.
Studebaker.

Street Cleaning Machines (Motor Driven).
Elgin Sales Co.

Street Flushers.
Buffalo Municipal Equipment Co.
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Russell Grader Mfg. Co.
Spaulding Mfg. Co.

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Studebaker.
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Rochester Can Co.

Surveyors Instruments.
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Republic Rubber Corp.
U. S. Tire Co.

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Buffalo Springfield Roller Co.

Traction Trains.
Buffalo Springfield Roller Co.

Tractors.
American-La France Fire Engine Co.
Couple Gear Freight Wheel Co.
Fairbanks, Morse & Co.
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Watson Wagon Co.
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George Cutter Co.
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Union Iron Products Co.

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Tree and Flower Bed Guards.
Wright Wire Co.

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Fairbanks, Morse & Co.
Water Works Equipment Co.
Worthington Pump & Mach. Corp.

Turbines.
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Vacuum Pumps.
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Eddy Valve Co.
Flower-Stephens Mfg. Co.
Ludlow Valve Co.
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Rensselaer Valve Co.
S. E. T. Valve & Hydrant Co.
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Simplex Valve & Meter Co.

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Water Works Equipment Co.

Water Main Cleaning.
National Water Main Cleaning

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Buffalo Meter Co.
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Wire-Cut-Lug Brick.
Metropolitan Paving Brick Co
Southern Clay Mfg. Co.

Wood Preservatives.
Republic Creosoting Co.

Wood Paving.
Republic Creosoting Co.



An Asbestic Compound For Covering Old Or New Roofs

Stormking, a composition of natural gums and waterproof oils reinforced with genuine Canadian asbestos, forms an impervious elastic, waterproof coating over roof surfaces of all descriptions.

It adheres perfectly to tin, wood, tile, stone, brick, slate, concrete, canvas, composition, etc.

The extremes of heat or cold or rain or snow do not affect Stormking—it will not run or crack.

We have such confidence in Stormking, based on years of experience, that we guarantee a surface treated with it, according to our specifications, **to remain absolutely water-tight, for a period of ten (10) years, and immune to rust, decay or corrosion.**

Stormking saves both time and money because anyone can apply it, on any surface, in any weather. ***Skilled labor is unnecessary.***

Stormking eliminates maintenance expense—no subsequent repairs or painting is necessary.

Supplied in liquid form, to be applied with a special brush furnished by us, or in paste form, to be applied with a trowel.

Write Dept. C for full information, testimonials, etc.

Efficiency Products Company

~~36 Fulton St. New York City~~

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Union Foundry Co.
Union Iron Products Co.
Union Water Meter Co.
United Lead Co.
U. S. Cast Iron Pipe & Fdy. Co
United States Tire Co.
Universal Road Machinery Co.

Waddell & Son.
Wallace & Tiernan Co., Inc.
Warren Bros. Co.
Warren Foundry & Machine Co
Water Works Equipment Co.
Watson Wagon Co.
Weiskittel & Son Co., A.
Westinghouse Elec. & Mfg. Co
Wetter Mfg. Co., H.
White Co., The
Wood & Co., R. D.
Worthington Pump & Mch. Cor
Wright Wire Co.

Yeomans Bro. Co.

Zelnicker Supply Co., W. A.

CUTTER FACTS

It Is A Fact That—

The safety of your populace in crossing streets and busy intersections is continually jeopardized unless your system of traffic regulation is an adequate one.

THE CUTTER TRAFFIC STANDARDS

are on duty day and night in many municipalities and are earning their cost daily in the saving of lives and preventing of accidents.

In addition to traffic standards of various styles, The Cutter Organization specializes on street lighting standards for the modern municipality. Would you like to receive our catalog on traffic standards? Would you like to receive our catalog on street lighting standards? We will send both catalogs if you desire.

THE GEORGE CUTTER COMPANY
413 Notre Dame Street
SOUTH BEND, IND.



SCOFIELD
ENGINEERING Co
· ENGINEERS ·
PHILADELPHIA

WE OFFER A COMPLETE ENGINEERING SERVICE

INVESTIGATIONS, RELIABLE REPORTS, DESIGNS
SPECIFICATIONS, ESTIMATES, SUPERVISION
MANAGEMENT

MUNICIPAL IMPROVEMENTS
Sewerage, Water Works, Electric
Systems, Streets.

PUBLIC SERVICE PROPERTIES
Railway
Electric, Gas, Water, Hydraulic

REFRIGERATION
Ice and Cold Storage Plants

INDUSTRIAL AND TEXTILE PLANTS

Save non-essential labor on roads



CAREY Elastite

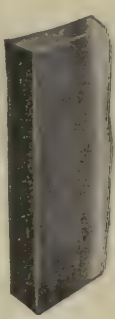
NAME REG. U.S. Patent Office

EXPANSION JOINT

THE hand that laid temporary spacing strips can lay permanent ELASTITE Joints—can

—lay them just as quickly.

—save the unnecessary labor of a gang coming along later and pouring joints at a great additional cost.



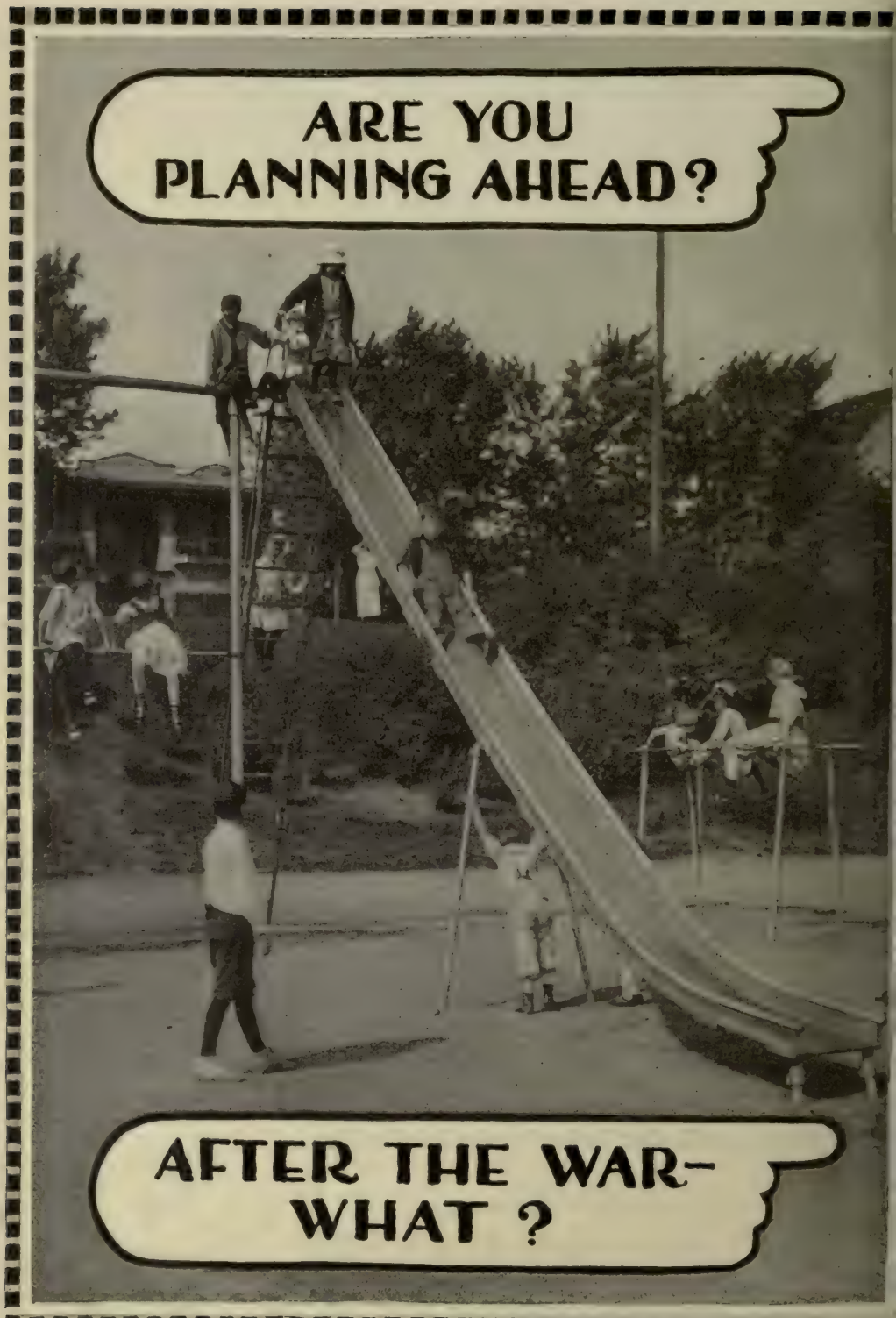
ELASTITE Joints are strips of asphalt compound sandwiched between two layers of asphalt saturated felt. Strips come to the job in thickness, width and length desired. They remain elastic, adhere to paving and absorb all contraction and expansion due to change in temperature—reacting and wearing as long as the street itself will last. Used on Lincoln and Dixie Highways, and prominent streets in Philadelphia, St. Louis, San Francisco and other leading cities.



For sample and complete information address

THE PHILIP CAREY COMPANY

8 Wayne Avenue Lockland, Cincinnati, Ohio



When writing to Advertisers please mention THE AMERICAN CITY.

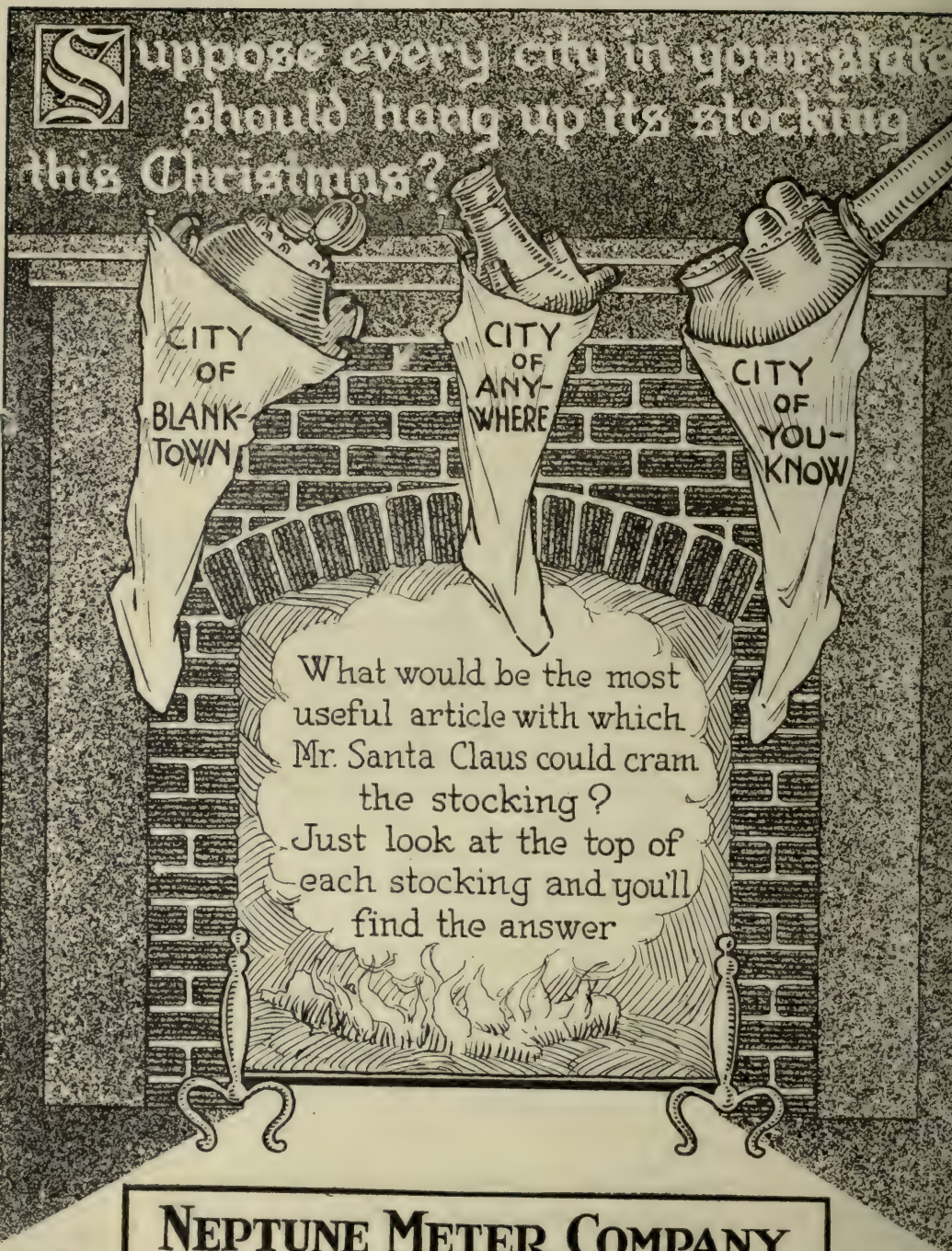
"In planning for after the war reconstruction do not overlook the playgrounds. War is seriously hurting the present generation. We must determinedly look ahead for the rebuilding of the human race. On our children will come the aftermath of war, the long struggle for recuperation which must follow the destruction of life and property on the present scale. And I am not thinking of the financial aftermath only or mainly. There will be great problems to be solved. We must make the coming generation strong and vigorous, able to meet the problems they are to face. Our playgrounds are a necessary link in this work. We must maintain their standard of efficiency."

Now Is the Time To Look Ahead And Do Your Planning

You will frankly admit that your community ought to pay more attention to playgrounds than it does. Why not make a start to-day by sending us your address so we can place your name on our mailing list to receive the illustrated printed matter which we issue from time to time relative to the most up-to-date methods of installing and maintaining public playgrounds?

The Everwear Manufacturing Company
Springfield, Ohio

EVERWEAR
STANDS WEAR AND TEAR



NEPTUNE METER COMPANY

50 EAST 42nd STREET, NEW YORK

CHICAGO · BOSTON · SANFRANCISCO
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Makers *of the* **Trident Water Meter**



A Water Meter for Every Service would be a Fine Xmas Present for your City

What a wonderful forward step it would be for your city if the coming of the Holiday season and the New Year could witness the installation of a water meter on every service in your municipality!

You cannot have real efficiency in any water distributing system without meters.

Perhaps you already appreciate this, but are wondering what kind of water meter will give most lasting service and all around satisfaction.

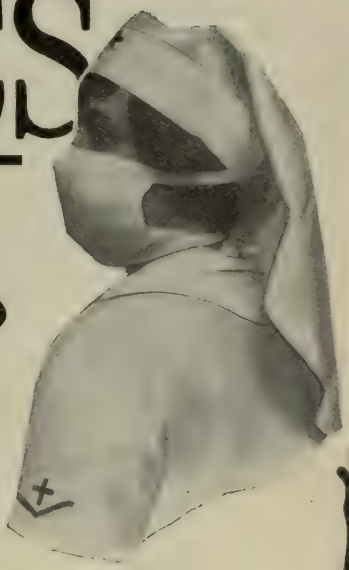
The experience of hundreds of water works in every part of the country points out the Trident Meter as the selection that you ought to make, if you are thinking of the future rather than studying how to save a few dollars at the start by picking out the lowest price that is quoted you.

The subject of water waste and its prevention is covered by our illustrated catalog and booklets which will be sent free, if you will forward us your address.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
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Makers *of the* Trident Water Meter


ENGINEERING NEWS-RECORD
Vol. 80, No. 19
892
Water-Supply at the Front in France
Engineering Work for American Forces Centralized in Specialists—Horses Important Factor in Quant
Estimates—"Water Points" Must Be Provided—British and French Water-Supply Practice Reviewed
By Robert K. Tomlin, Jr.
War Correspondent of Engineering News-Record
G NEWS-RECORD
Vol. 80, No. 1
quality of the water furnished to our troops. The
British and French have used hypochlorite of lime for
this purpose, but four engineers have developed plans
for the extensive use of liquid chlorine apparatus of
the Wallace & Tiernan type. Some of these outfits,
I am informed, will be mounted on motor trucks.
What has been said in the foregoing notes refers
exclusively to advance areas of the front at our supply
part of the story. Back of the front at our Army
bases and along our lines of communication many water-
supply projects, some of them involving filtration plants,
are included in the program of work for our Army
rd ground 30
ng the digging
face can be pru-
bags over exposed
ets puncture a line repairs
the pressure is low, with
holes split sleeves are use-
are sprayed with shrap-
but and replaced. On
d advantageous to have
e-half and one-quarter
hreads and
ater
rice. In a later article I hope to give
r-supply in the district of
"W & T" Equipment
is protecting "Our Boys" from danger of water-borne epidemics "Over There" just as it is at home.
Liquid Chlorine
is admittedly the most efficient agent for the complete sterilization of water supplies, when properly applied and controlled.
"W & T" Apparatus
is an efficient method of properly applying and controlling Liquid Chlorine. Write for interesting booklets.
WALLACE & TIERNAN CO., Inc., 349 BROADWAY New York City
People's Gas Building, Chicago, Ill.
Canadian Representatives: The General Supply Company of Canada, Ltd., Ottawa, Montreal, Toronto, Winnipeg, Vancouver.
Pacific Coast: Kenneth Shibley, Merchants' Exchange Bldg., San Francisco, Cal.

EPIDEMICS



After the FLU — What?

The toll exacted by the epidemic sweeping the whole country is beyond human reckoning.

Years may pass before the United States is again visited by this terrible scourge, but

—— if it was known that Spanish Influenza would again ravage our cities and towns,

—— if it was known that effective means had been discovered to combat this dread menace,

public sentiment would demand that they be employed—whatever the cost

Wise Communities Know There Are Other Epidemics Which Should Be Guarded Against

—— that Chief among these is Typhoid, due to impure water supplies,

—— that no water supply can be said to be safe that is not sterilized,

—— that Liquid Chlorine is the 100% efficient sterilizing agent,

—— that the cost of using it for complete protection against Typhoid and other water-borne diseases—is less than two cents a year per person,

—— that hundreds of places have become veritable "Isles of Safety" because of this protection.

AFTER THE FLU — WHAT?

Spanish Influenza weakens the system, and leaves those who have had it particularly susceptible to TYPHOID.

Is your City or Town prepared?

Write at once for interesting booklet, "The Wise Cities"

ELECTRO BLEACHING GAS COMPANY

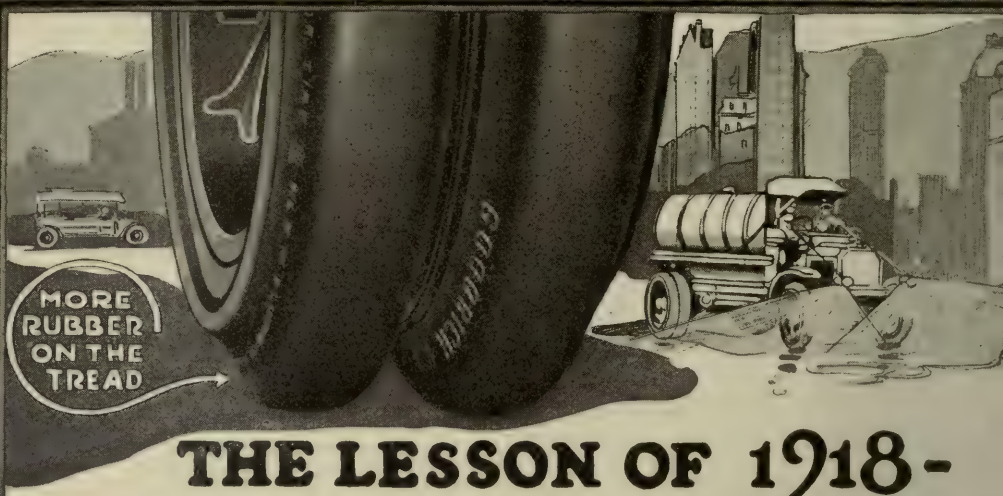
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18 East 41st Street, New York

Chicago Office: 11 So. La Salle Street

Canadian Representative: GENERAL SUPPLY CO. OF CANADA, Ltd.,
Ottawa Toronto Montreal Winnipeg Vancouver.

Liquid EBG Chlorine



THE LESSON OF 1918-

IT is written boldly and addressed to every individual and community—CHOOSE YOUR EQUIPMENT CAREFULLY.

Choose it with a thought of making it go furthest—further than ever before. Make every dollar invested pay double dividends in service yielded.

Citizens of municipalities, stinting themselves to contribute to Victory's cause, making daily sacrifices in money and blood, insist on the utmost economy in city administration.

That is why, Mr. Purchasing Agent, we urge that you give exceptional study and care NOW to the item of truck tires. They are not mere bands of rubber—they all differ.

If you'll apply the war standard of buying to truck tires you'll buy Goodrich De Luxe Truck Tires. They are made of a compound unusual in wear-resisting elements and must wear long and slowly. Besides the perfect distribution of rubber gives you more tough, resilient cushion on TOP of the tread and less chipping.

You Can Buy Goodrich De Luxe Truck Tires at the Goodrich Branch in Your City

THE B.F.GOODRICH RUBBER COMPANY

The City of Goodrich—AKRON, OHIO

MORE RUBBER ON THE TREAD

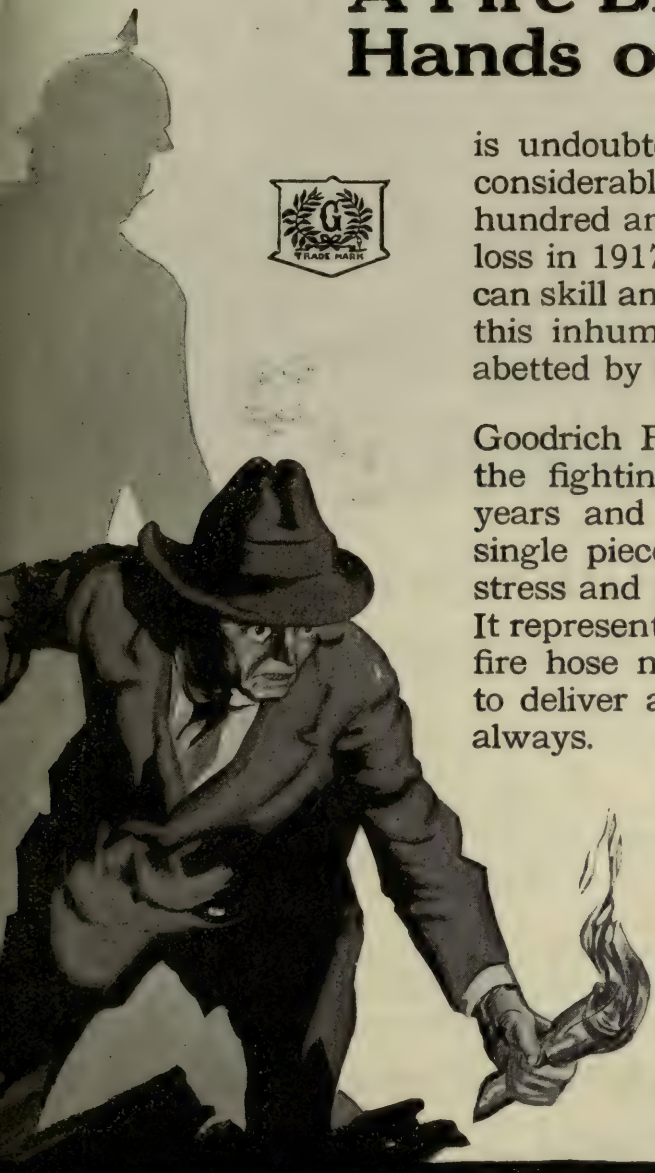
De Luxe Truck Tires

GREATER PROTECTION FOR LOADED TRUCKS

MADE ONLY BY

GOODRICH

A Fire Brand in the Hands of the Devil



is undoubtedly responsible for a considerable proportion of our two hundred and fifty million dollar fire loss in 1917, and only with American skill and alertness can we fight this inhuman evil prompted and abetted by enemy propaganda.

Goodrich Fire Hose has been on the fighting line for nearly fifty years and we never heard of a single piece going bad under the stress and strain of actual service. It represents America's best skill in fire hose making and is prepared to deliver a good account of itself always.

Remember the name—

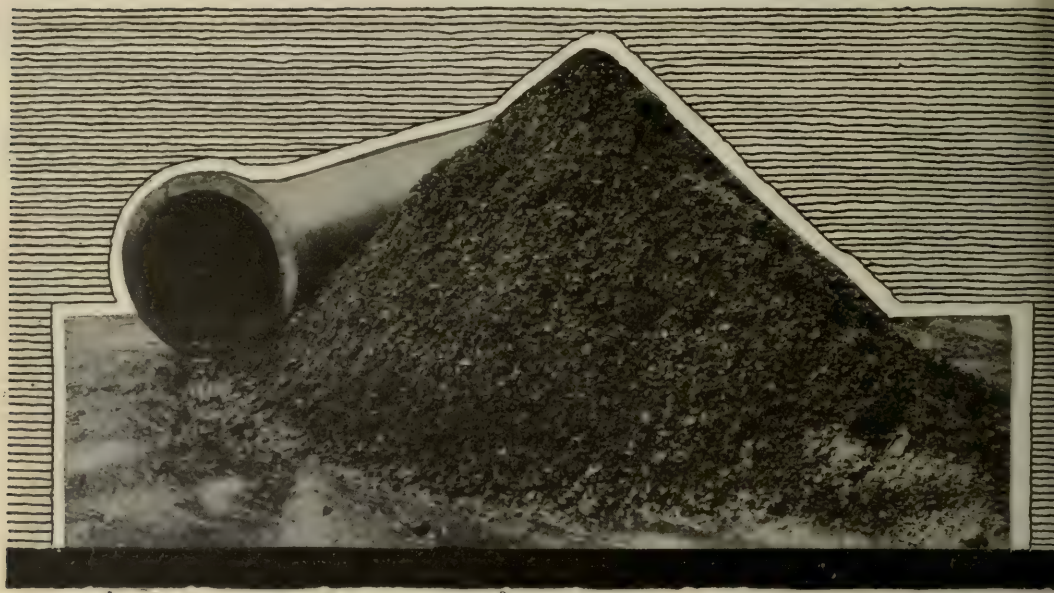
Goodrich
"White King"
Fire Hose

THE B.F.GOODRICH RUBBER COMPANY

Makers of the Celebrated Goodrich Automobile Tires—*"Best in the Long Run"*

The City of Goodrich—Akron, Ohio

GOODRICH "WHITE KING" FIRE HOSE



It Is a Safe Bet That You Do Not Appreciate How Much Sediment There Is Incrusted Around the Inside of Your Water Pipe

The pile shown in the illustration above is only a small part of what we removed by the National Method from one set of water pipes on which we were working.

Having your pipe stopped up in this way means unhealthful conditions—reduced pressure for your fire department—and other troubles and expenses, including the laying of new mains. All these troubles can be avoided by arranging with us to clean out your present pipe. Write for free booklet "The Cleaning of the Water Main."

National Water Main Cleaning Company

HUDSON TERMINAL BUILDING

NEW YORK CITY

THE NATIONAL METHOD

HAVE YOU EVER HAD YOUR SEWER SCRUBBED?



THE TURBINE SEWER MACHINE IS MORE EFFICIENT THAN A SCRUBBING BRUSH

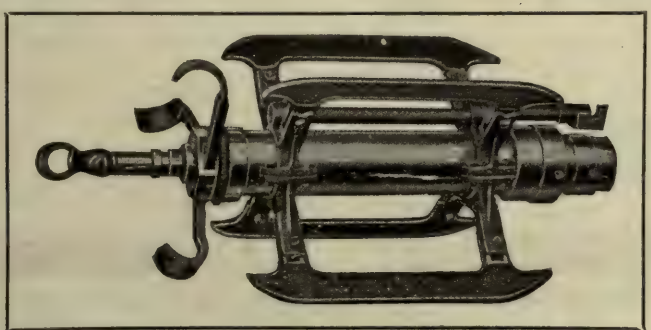
You would find it a difficult proposition to get enough workers to scrub out the insides of your sewers. Furthermore, it would be mechanically impossible, as well as too unsanitary for even a moment's consideration.

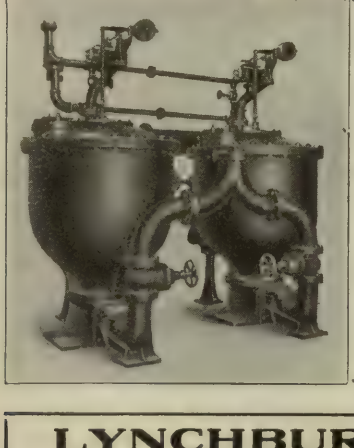
Yet your sewers need to be cleaned, and this urgent need has led to the invention and development of the Turbine Sewer Machine as illustrated below. It does the work promptly, thoroughly and in a sanitary manner, to the entire satisfaction of all concerned.

A healthy city is the first essential. The Turbine Sewer Cleaner keeps your sewers from making trouble for your health department. Are you interested? If you will mail us your address, we will send you illustrated printed matter showing the results obtained by the Turbine Machine in other places. If you buy sewer rods, we make them also.

The Turbine Sewer-Machine Co.

197 Eleventh Street **Milwaukee, Wis.**





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CITY OFFICIALS SHOULD WRITE FOR OUR EJECTOR BULLETIN ON THE HANDLING OF SEWAGE —SENT FREE ON REQUEST.

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What municipalities say about *Deming* Power Pumps

used daily for the past 15 years, and has required no repairs and is now in good working order.

cost of maintenance and repairs have been practically nothing.

—the only repairs, a few springs and rubber valves, the plungers being turned down once in eight years.

It is costing us 12-1/4 cents per 1000 gallon to handle our water

Have been using one of your pumps for 12 years with complete satisfaction.

Have been in daily service about 90% of the time since May 1903 and have given entire satisfaction.

No one in need of power pumps will make a mistake in selecting Deming.

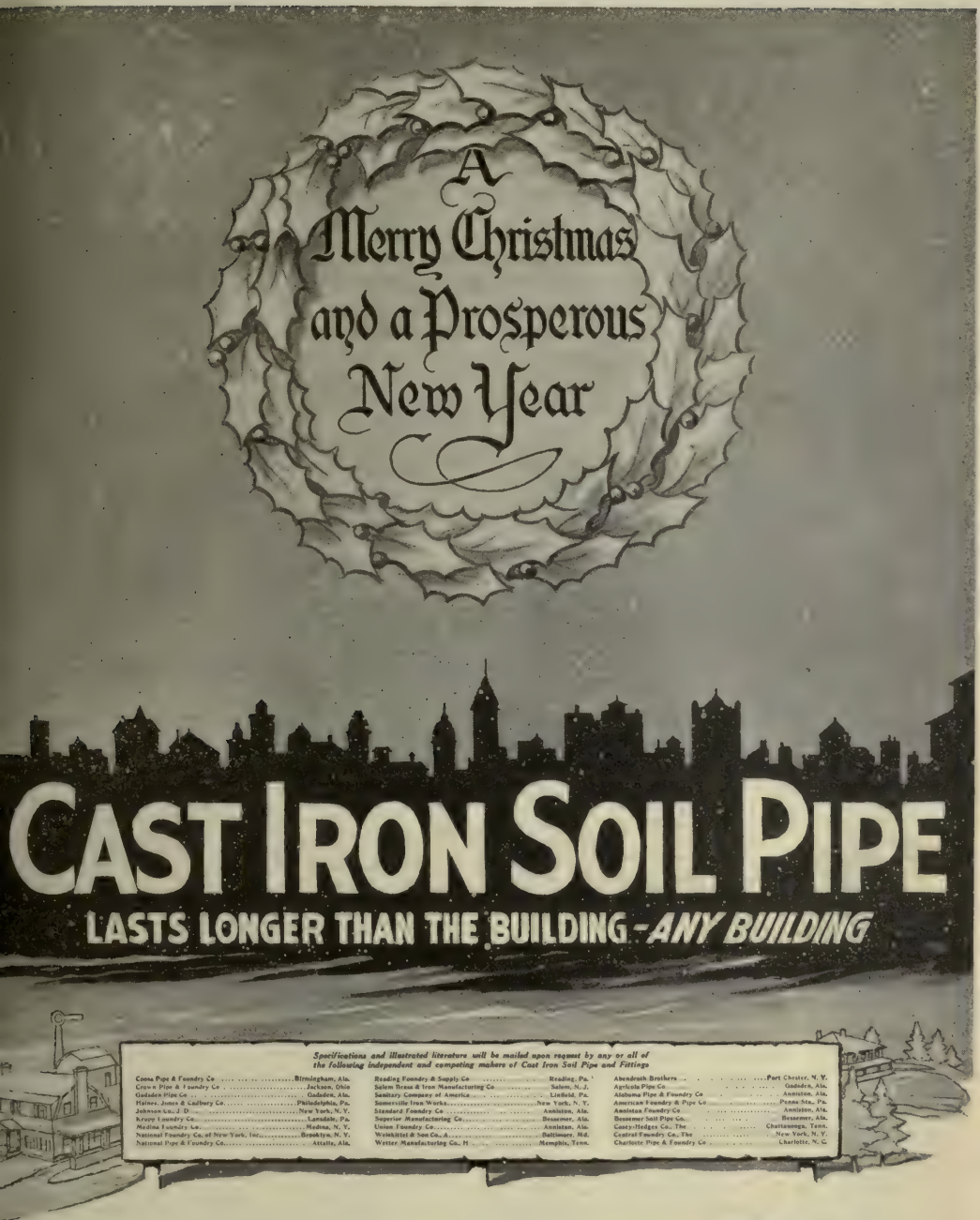
READ these random reports from Sacramento and Oakland, Cal.; Valley City, N. D.; Danville, Ill.; Medina, O.; Hiram, O.; and Medford, N. J.

192-page pump catalog sent to city officials upon request.

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"JUST JUNK," you say. That is where you are wrong, friend. True the car is loaded with material cleared away for the new Union Station, Chicago, material which has been in service from ten to forty years, with that Cast Iron Pipe for the longer period.

"Junk!" You're right; all that other material is junk and not worth much, but that

Cast Iron Pipe Is As Good As New

and, what is more, it is worth more today than its original cost.

"Looks Rusty." Sure it does, and sure it is that it is that surface rust which, by excluding oxygen, prevent combustion—rusting is but slow combustion, you know—and thus enables CAST IRON PIPE TO GIVE SERVICE MEASURED BY CENTURIES.

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STRICKLER
RATCHET PIPE CUTTER



You will be surprised at the speed. At the Smooth, Clean, Square Cut. No filing or reaming after the Automatic Strickler has done its work. Each size cuts a range of pipe sizes.

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Water Meters

Pittsburgh Meter Co.
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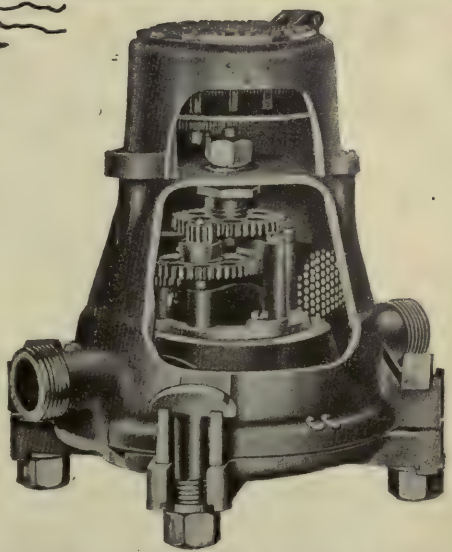
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Badger Water Meters have helped ightily in eliminating water waste nd thereby saving coal, labor and achinery, in other words, Badger eters stand for efficiency.

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YOUR CITY CAN HELP SAVE

Saving Water Means Saving Coal, Machinery and Labor. **This is Vital During the Period of Reconstruction.**

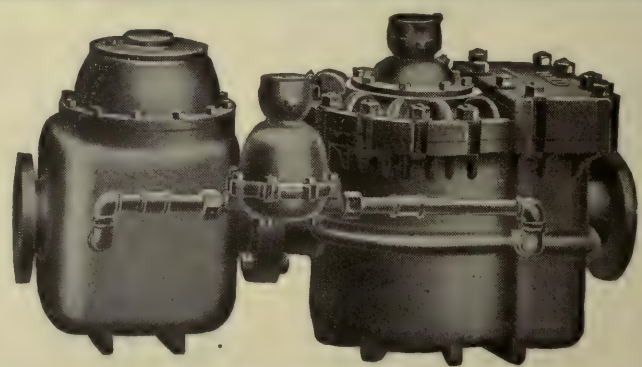
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The installation of Lambert Water Meters will save the water which conserves the coal and labor.



Why not specify Lamberts and get the best?

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The Union Compounding Valve Makes it Possible for any Large Meter to Register the Trickle as well as the Rush.

Simply take the valve and the small meter and attach them to the large meter, and you have an accurate and simple compound meter at a remarkably low cost.

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"NOTHING succeeds like success"—this is in brief the story behind each of the plants grouped under the Worthington name.

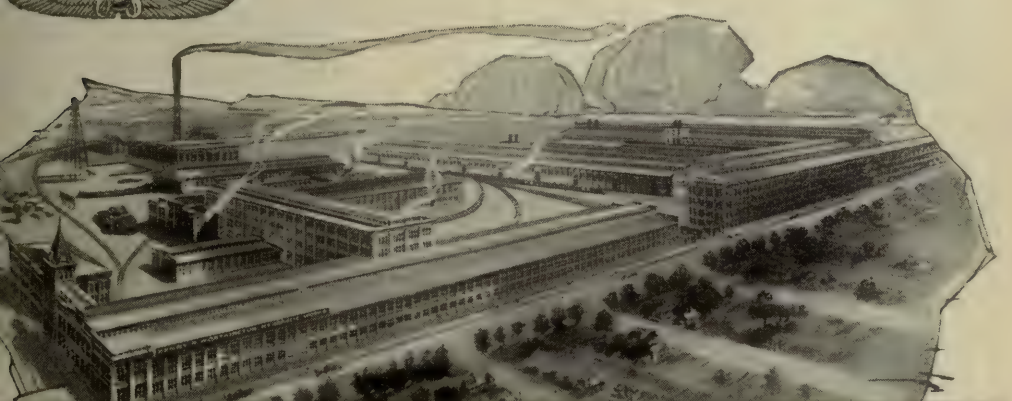
For each has, through many years, held its own high place in the esteem of American industry; indeed each was called into being by some vital need of industry, and you will find our products in the service of countless important branches of the country's production.

And because our products are such necessary partners in so many and so varied interests, our growth has fairly paralleled the nation's industrial development. From modest beginnings to eight great plants, each both pioneer and leader in its field, each under a common name preserving past traditions of service and satisfaction—this is the concrete measure of Worthington success, and a hint as well of the even larger part to be played in the future.

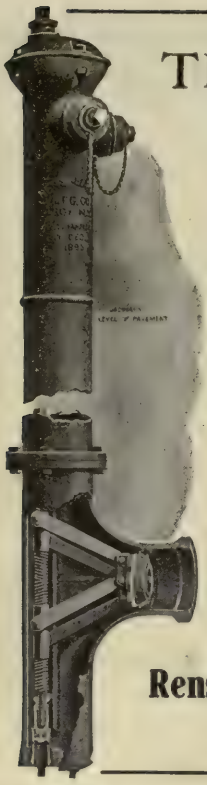
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All inner parts of Smith F Hydrants removable witho disturbing the standpipe in t ground.

Positive acting drip and water forced into ground und pressure when opening or closi

All points of contact are bron to steel or iron. Ordinary size SMITH HYDRANT w deliver at nozzle 250 gallo of water per minute with frictional loss of only 1.7 poun pressure.

Also maker of High Pressure Fire Hydrants, Gate Valves, Brass Goods, Valve Inserting, Machines, Tapping Apparatus, Corporation Tapping Machines and other wate.-works goods.

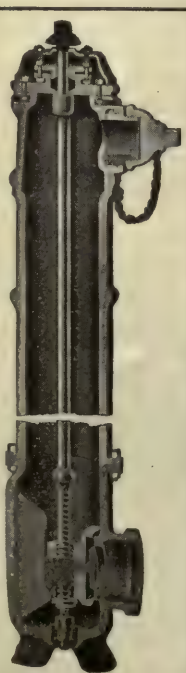
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Frost-Proof

Simple-Efficient



All parts removable without digging up hydrant. Special device prevents street from being flooded should stand pipe be broken Minimum expense to install and maintain

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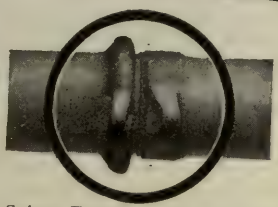
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Can be laid anywhere—any time—under any conditions. Tested and approved for Fire Protection by the National Board of Fire Underwriters



nd Spigot End



Spigot End Entered in Hub



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The Pipe and Joint are cast iron. The contact surfaces of the hub and spigot ends are machined on a taper, giving a natural iron to iron joint.

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Tightening Bolts with Ratchet Wrenches



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Water **Refrigeration**
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P&C CO **VALVES & HYDRANTS** P&C CO

of UNUSUAL QUALITY — for UNUSUAL SERVICE

Pratt & Cady Co., Inc. Write for Catalogue **Hartford, Conn.**

COLUMBIAN IRON WORKS
CHATTANOOGA, TENN.
Manufacturers of Fire Hydrants, Valves, Valve Boxes, Sluice Gates Meter Boxes and Water Works Supplies
ESTIMATES PROMPTLY FURNISHED

ENTERPRISE PROTECTIVE FENCE

protects and beautifies

Keeps out undesirable persons. Beautifies surroundings and increases values. Does not obstruct fine views.

Schools, Hospitals, Parks, Estates, Public Bldgs., Cemeteries, Asylums, Etc., Etc.

Send for Illustrated Catalog expl ing offer to make free blue-print Enterprise fencing for any proper

ENTERPRISE IRON WORKS **1190 E. 24th St., Indianapol**
Specialists for 33 years in All-Iron and Iron-and-Woven-Wire protective fencing

SLUICE GATES, CHECK VALVES, AIR VALVES, INDICATOR POSTS, ETC.

GATE VALVES **EDDY** **FIRE HYDRANTS**

Hydraulically and Electrically Operated Valves and Sluice Gates. Valves Designed For All Kinds of Servic

EDDY VALVE COMPANY, WATERFORD, N. Y.

New York **Chicago** **Boston** **San Francisco** **Philadelph**

ORIGINAL
OF COURSE WE HAVE IMITATORS
YOU KNOW WHY—

the Clark Meter Box has *made good* in 25 years of actual service. Thousands of water departments use it. No other "*Just As Good*" Can't Be.

Prices are the lowest. Quick delivery. Other Clark Goods are in same class.

THE CLARK METER BOX — REGISTERED
Trade Mark

H. W. CLARK CO.
130 So. 17th St., Mattoon, Ill.
Everything for the Water Works
New York **Salt Lake City**
San Francisco **Chicago**

Chapman Valves and Accessorie

Everything for Water Works and Sewa Disposal but the Pipe.

Corporation and Curb Cocks.

Goosenecks—made up with Anderson cou lings which eliminate wiped joints.

Gate Valves Sluice Gates Hydrants

Catalogue containing valuable informati free on request.

Write Today

THE CHAPMAN VALVE MFG. CO.
INDIAN ORCHARD, MASS.

WASTE OF WATER IS A WASTE OF DOLLARS

You may suspect that water is going to waste somewheres from the mains although not showing on the surface. Yet you have no means of locating it.

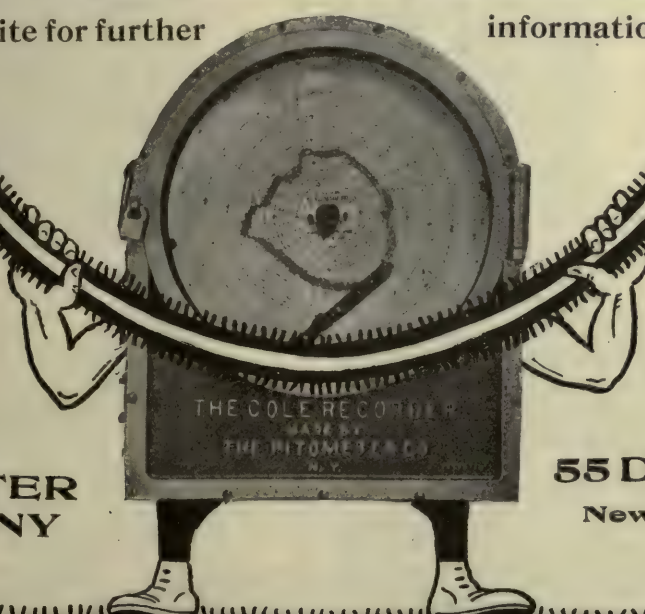
The question of WASTE is a national subject. Let us tell you about a PITOMETER WATER WASTE SURVEY.

A PITOMETER WATER WASTE SURVEY will save your plant thousands of dollars in coal and upkeep.

Don't you think this is a subject well worth considering since the saving of FUEL and conservance of equipment are both involved?

If your supply is by gravity, stopping leaks will indefinitely postpone the need of additional water.

Write for further information.



THE
TOMETER
OMPANY

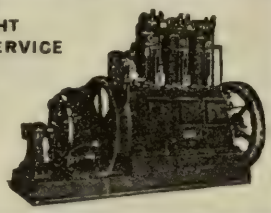
55 Duane St.,
New York City

THE FOOS

WATERWORKS
ELECTRIC LIGHT
and POWER SERVICE

Fuels
Producer Gas
Natural Gas
Kerosene

Sizes
6 to 325 hp.



THE FOOS GAS ENGINE CO. SPRINGFIELD, OHIO.

MICHIGAN
PRODUCTS

Fire Hydrants
Gate Valves
Sluice Gates
Check Valves
Foot Valves

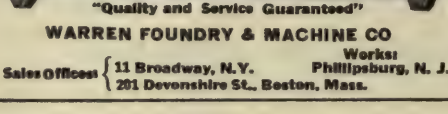
Shear Valves
Tide Valves
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Indicator Post
Valve Boxes

FLOWER-STEPHENS MANUFACTURING COMP
103 Parkinson Street, Detroit, Mich

Manufacturers of CAST IRON PIPE



for WATER—GAS—CULVERTS—SEWERS
Special Castings:-Also Flexible Joint Pipe-Cylinders-Tubes.
Milled and Plain Ends-High Pressure Fire Service Pipe.



"Quality and Service Guaranteed"

WARREN FOUNDRY & MACHINE CO

Sales Offices { 11 Broadway, N.Y. / 201 Devonshire St., Boston, Mass. }
Works: Phillipsburg, N. J.

Points of Advantage
The Adjustable Manhole To

1st Instantly brought to grade at installation
2nd Quickly re-adjusted without excavation.
3rd Wears longer.
4th Cover does not rattle or become displace
Wears uniformly with frame.
5th Cost of Replacements reduced 60% in m
terial and labor. Quick shipments.

S. E. T. Valve & Hydrant C
Hudson Terminal Bldg., New York
Cast Iron Specialties for Improved Municip
Street Service

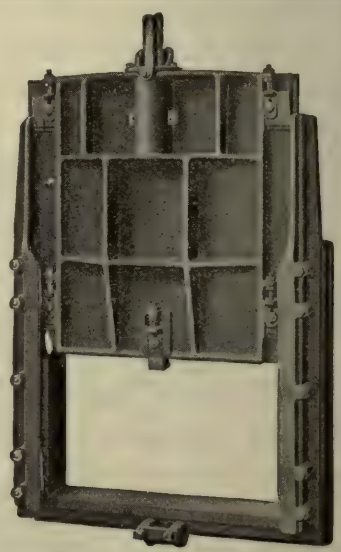
EASY-TO-READ
Hinged-Lid Meter Setting

Do not take simply a promise but insist on a written guarantee that your meters will not freeze, with a definite agreement to pay for their repair if they do freeze.

Write us for information as to how to set your meters so that they will always be easy to read and to repair and how to prevent clouding of glass over counter.

LEWIS McNUTT
28 McNutt Bldg.
Brazil, Indiana

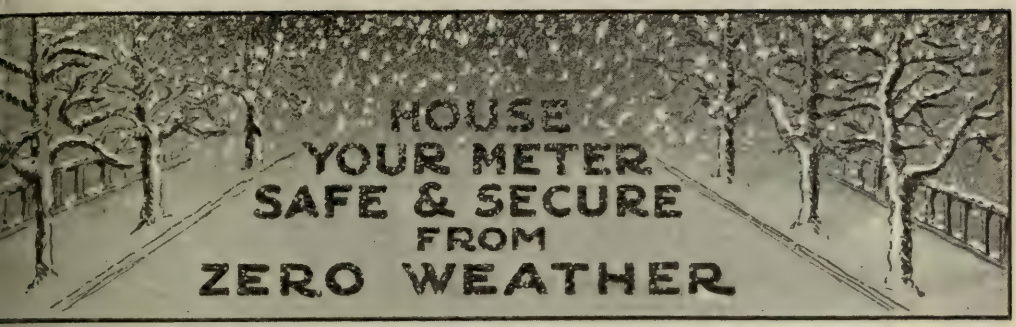




Sluice, Head and Penstock Gat
Flap and Shear Valves

The kind that don't wear out

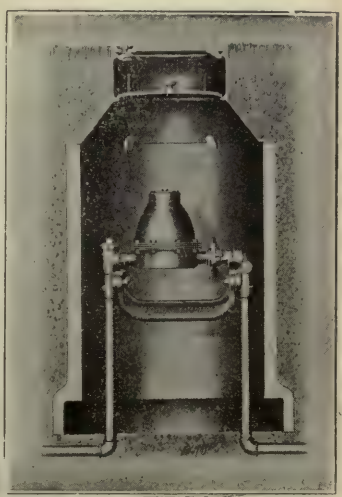
COLDWELL, WILCOX COMPAN
Water Street Newburgh, N.



Why Should Winter be a Cause of so Much Unnecessary Worry to the Water Works Department?

An ounce of prevention is worth a pound of cure. Frozen meters can be prevented and the ounce of prevention is the Ford Meter Box. Why not take this matter in hand and guard your meters for good and all with the encircling protection of the Ford Meter Box?

t us have your address so that we can send u printed matter about Ford Meter Boxes d their special features which have made em popular wherever used. Also we would e to tell you about Ford Meter Testers, rd Meter Settings and Ford Expansion uplings. It's an interesting Ford story ogether and we shall be glad to hear from u so that we can send you the details.



Ford Meter Box Company

WABASH, IND.

MATHIESON ALKALI WORKS, Inc.

Niagara Falls, N. Y.

Castner Electrolytic Process

Eagle-Thistle Brand

CHLORIDE OF LIME

In 200, 450 and 750-lb. drums Strongest, quickest-settling, most reliable.

LIQUID CHLORINE

Pure anhydrous, for use with any control apparatus. In improved and convenient cylinders, 105 and 150 lbs. net.

ARNOLD, HOFFMAN & CO., Inc.

Sole Agents

Boston **Providence** **61 Broadway New York** **Philadelphia** **Charlotte, N. C.**



GRAVITY **FILTERS** PRESSU

WATER SOFTENING PLANTS AND HYPOCHLORITE APPARA

ALL VARIETIES OF

CHEMICAL FEEDING DEVICE

Write for Bulletin 17-3

THE NEW YORK CONTINENTAL JEWELL FILTRATION

NUTLEY, N. J.



The Longest Service Paint f

Metal and Wood Surfaces

DIXON'S SILICA GRAPHITE PAIN

Made in First Quality Only

Favorably known for over fifty years. Time-tests prove to be the most durable for iron fences, tanks, cornices, smo stacks, fire escapes, pipes, boiler fronts, and any kind of m or wood work requiring protection.

May we count Y O U among our valued paint customers?

Write for Booklet No. 107 B and long service records.

Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE CO

Established 1827

ACTIVE SERVICE

YEARS OF SUCCESS

Filtration Plants

for

Municipal Needs

Y. M. C. A.'s, Colleges

and all Institutions

Write for Booklet

NORWOOD ENGINEERING COMPANY

Florence **Mass.**

OZONE

The Most Powerful Germicide and Oxidizing Agent Known to Science

PURIFIES WATE

by destroying

ODORS, TASTES and BACTER



Harmless, Inexpensive, Effectiv

Mr. Geo. A. Soper in Engineering News, Vol. page 250, says, "The claims made for the oz treatment of water are as distinct and its functi as clearly defined as are those of filtration and s mentation. Ozonation aims to eliminate bact from water and to destroy unpleasant colors odors of vegetable origin. It is especially valu in removing unpleasant odors."

We furnish ozone systems for cities, insti tions, etc.

Electric Ozone Sterilizer C

53 W. Jackson Blvd., Chicago, Illinois

Chemicals for Water Purification

We manufacture highest grade of

Sulphate of Alumina

also

Chloride of Lime

Liquid Chlorine

PENNSYLVANIA SALT MFG. CO.

WIDENER BLDG. :: :: PHILADELPHIA, PA.

PURE WATER

and

PITTSBURGH FILTERS

are found together

Where Pittsburgh Filters are at work there you will find pure water.

Over 700,000,000 gallons of pure water is being supplied to 180 municipalities and in no way can it be had more surely and at the same time so economically as by the use of Pittsburgh Filters.

Write for booklet

PITTSBURGH FILTER MFG. CO.

Chicago **Pittsburgh, Pa.** Kansas City

DU PONT AMERICAN INDUSTRIES



Highways Feed Railways

Mark X before subject that interests you and **Mail This Coupon** to

E. I. du Pont De Nemours & Co.
Advertising Division
Wilmington A. C. Delaware

- [ ] Industrial Dynamites
- [ ] Blasting Powder
- [ ] Blasting Supplies
- [ ] Py-ra-lin Toilet Goods
- [ ] Challenge Collars
- [ ] Ry. & Marine Paints
- [ ] Motor Fabrikoid
- [ ] Craftsman Fabrikoid
- [ ] Alums
- [ ] Trapshooting
- [ ] Commercial Acids
- [ ] Py-ra-lin Enamels

Name.....
Address.....
City.....
State.....

Never before have our roads been so important. The tremendous tonnage of freight and express required for national work has turned all main roads into freight lines and side roads into feeders. Heavy motor truck traffic demands better roads. Don't let them deteriorate.

DU PONT

Red Cross Dynamite

is a powerful first aid in road construction, improvement and maintenance. It replaces much labor of men, teams and machinery and reduces cost in cutting grades, eliminating projecting hillsides, straightening streams, and cleaning right of way.

Check Industrial Explosives in the coupon and write in the margin "Road Work." We will send full information including our big illustrated book on road construction and maintenance by all modern methods.

E. I. Du Pont De Nemours & Co.
Established 1802
Wilmington Delaware

DU PONT

—yes, some twenty years ago

Twenty years ago, we made a big lot of Enameled Iron Street Signs for the City of Baltimore, but we haven't sold the City many since—only because

THE TOWN HASN'T NEEDED THEM

The signs we sold them twenty years ago are still doing business—that's the economy of "BALTO" Guaranteed Porcelain Enameled Iron Municipal Signs.

That's the proof that there is no "just-as-good."

If you can afford to experiment with low prices (?) you're fortunate, but the taxpayer pays the freight. Our product is the one absolutely dependable out-of-door municipal sign on the market, and we can prove it if given half a chance.

GIVE US THE CHANCE TODAY

Quotations and a sample of our finished product upon request—this involves no obligation on your part whatever.

May we send it to-day?

Write Dept. C.

THE BALTIMORE ENAMEL & NOVELTY CO.

Baltimore, Maryland, U. S. A.





HOW THEY DO IT IN OTHER PLACES



Valuable Illustrated Material, Statistics, etc., Regarding Methods, Materials and Appliances for Public Improvement Work, Sent Free of Charge

Manufacturers, engineers and others doing business with municipalities are invited to submit catalogs or circulars suitable for mention in these columns. THE AMERICAN CITY *should always be mentioned when writing for this material. Officials who check over these items each month and write for such printed matter as interests them, will find this a convenient way of keeping their information files up to date.*

An Auto Street Sprinkler and Sweeper.

Under the title of "An Hour at Elgin," is a 12-page pamphlet containing reproductions of a series of photographs showing the Elgin at work. These pictures are accompanied by descriptions of the machine's operation. The Elgin is a machine that sprays the street, sweeps it and collects the sweepings—all at one time. The power is supplied by a motor and it is entirely operated by one man. (Apply to the Elgin Sales Corporation, 501 Fifth Avenue, New York City.)

Concrete Lighting Posts and Drinking Fountains.

The Chicago Concrete Post Co., of 608 So. Dearborn Street, Chicago, Ill., has a very attractive catalog ready for distribution. The company's products include lighting poles, sign posts, drinking fountains, flower urns, park benches and sun dials, all of concrete construction. The lighting poles are made solid, reinforced with four twisted rail carbon steel rods. The illustrations are accompanied by mechanical drawings showing the details of construction.

The New Era in Street Lighting.

The Holophane Glass Company, 340 Madison Avenue, New York, has issued an attractive quarto catalog (Booklet No. 150) describing in detail a system of scientific street lighting that is said to combine the higest requirements of service and economy with the highest requirements of pleasing ornamental effect. The catalog contains many fine illustrations, and numerous curves make clear the principles of light distribution. All public officials interested in lighting will find it advantageous to write for this catalog.

"The Chief Must Be Perfectly Satisfied"

is the title of a 12-page pamphlet issued by the Dayton Rubber Manufacturing Company of Dayton, Ohio. It contains the names of cities thruout the United States and some in Canada which are users of Dayton Airless Fire Tires, designed and built exclusively to meet the requirements of Fire Department service. This service demands quick starts and sudden stops, accurate steering, resiliency under heavy loads and great speed. The company states that Dayton tires prolong the life of the apparatus at least 50 per cent.

Pigs as Garbage Disposal Agents.

A number of municipalities are using the pig as a garbage reduction plant with considerable profit to themselves as well as advantage to the country in general thru the increase of the meat supply resulting therefrom. The Alpha Portland Cement Company, Easton, Pa., has published a booklet giving an interesting summary of what is being done along the line of municipal garbage disposal thru feeding to pigs.

Fruit and Ornamental Trees.

A catalog of fruit trees, vines and shrubs, shade trees, evergreens, hedges, flowering shrubs, ornamental vines and other plants, of value to park superintendents and others interested in making the city or town more beautiful. Issued by Harrisons' Nurseries, Box 70, Berlin, Md.

Save Money on Your Fire Hose.

The reasons why Bi-Lateral Hose gives better and service on account of its special form of constructi described in the booklet which can be secured on a tion to The Bi-Lateral Fire Hose Company, 326 Madison Street, Chicago, Ill.

Steel Forms for Making Concrete Meter Barrels.

In this pamphlet the Ford Meter Box Compa Wabash, Ind., tells how to make concrete mete barrels, either straight or tapering. The forms are in various sizes to suit standard and special measure and are also used for manufacturing concrete pipe.

Sewage Ejectors.

A bulletin is being distributed by the Yeomans Br Company, 231 Institute Place, Chicago, Ill., illust and describing the Shone system of pneumatic e for municipal sewerage systems. The Shone ejecto matically raises sewage and drainage from basemer low the street sewer level.

A Permanent Soldiers' Memorial.

Some communities are erecting honor rolls to be names of the sailors and soldiers who represented but are making the mistake of building them of Such a temporary proposition is scarcely a fitting m of perpetuating the names of the brave men who won our victory for us. The Lebanon Machine Co Lebanon, N. H., is distributing literature relative far different sort of memorial in the shape of a permanent honor roll of solid cast iron of heavy struction, finished in oxidized copper and gold b Full information, illustrations and prices of these p nent honor rolls will be mailed on request by the facturer.

Road Roller Equipped with Pressure Scar

Those interested in building or repairing roads shou the four-page pamphlet issued by the Buffalo-Sprin Roller Company of Springfield, Ohio, which illustrat describes the Buffalo-Pitts and the Kelly-Springfield rollers equipped with pressure scarifiers. The co states that the direct connected compression cylinder force sufficient for tearing up hard stone street roads, and the long stroke gives the elasticity requi maintain uniform cutting depth on extremely u surfaces.

Protecting the Commercial District from

The Allis-Chalmers Manufacturing Company, Milw Wis., has issued in pamphlet form a reprint of t port of the high-pressure fire main and pumping s protecting the congested mercantile and light manuf ing districts of Cleveland, together with a repo demonstrating tests of the new system. A map district affected and photographs of the tests mak pamphlet of unusual interest to those interested i protection.

Jails for Cities and Counties.

Municipal and county officials having to do with work will be interested in the catalog distributed fr application by the E. T. Barnum Iron Works, D Mich., describing jail entrance doors, jail cells, jai steads, steel window guards, sanitary jail equipmen other prison specialties.

Continued on page 36.

Manufacturers of

Chemicals for Water Purification

Liquid Chlorine

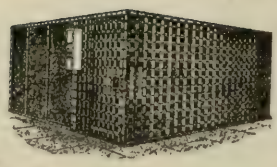
Chloride of Lime

We handle all Heavy Chemicals

Prices furnished for prompt
and future deliveries

Hooker Electrochemical Co.

40 Wall Street, New York
Works, Niagara Falls, N. Y.



Ornamental Wire, Iron and Brass Work

Send for our Illustrated Catalogue

Jail Cells and Jail Work, Cemetery Entrances and Fence, Mausoleum Doors and Equipment, Fire Escapes, Flag Poles, Park Settees, Lawn Furniture.

Consulting with us about your problems and asking for estimates does not place you under any obligation whatever.

E. T. BARNUM, *Wire and Iron Work,*
DETROIT, MICH.

EDEXCO
GLASS HEAD **MAP PINS**

Solid color glass heads. Steel points. Stay where put. 2 sizes—16 colors.

Used with city maps and Edexco Mechanical Graphs to show details of improvement work.

Send 30 cts., stamps or coin for Big Sample Package of Map Pins, EDEXCO Map Mount, Charting Papers, Curve Cards and Catalog. Catalog & Illustrated Booklet Free.



EDUCATIONAL EXHIBITION CO.
127 Custom House St.
Providence, R. I.

Wanted—Immediately

Compound Engine Generators

one each

100 to 150 KW
300 to 375 KW
220 or 440 Volt

3 phase, 60 cycle.

Describe fully and name cash price. Will also consider turbo units.

Address Box 62 care The American City

The Municipal Buyers' Guide

beginning on page 78 is a valuable source of information for all municipal officials :-:

GREAT WESTERN ELECTRO CHEM CO.
BUSH, BEACH & GENT
SOLE AGENTS
CARBON TETRACHLORIDE
POTASSIUM CHLORATE
BLEACHING POWDER
LIQUID CHLORINE
CAUSTIC SODA
SAN FRANCISCO, CAL.

A Contract is a Contract

Liquid Chlorine

Soda Ash

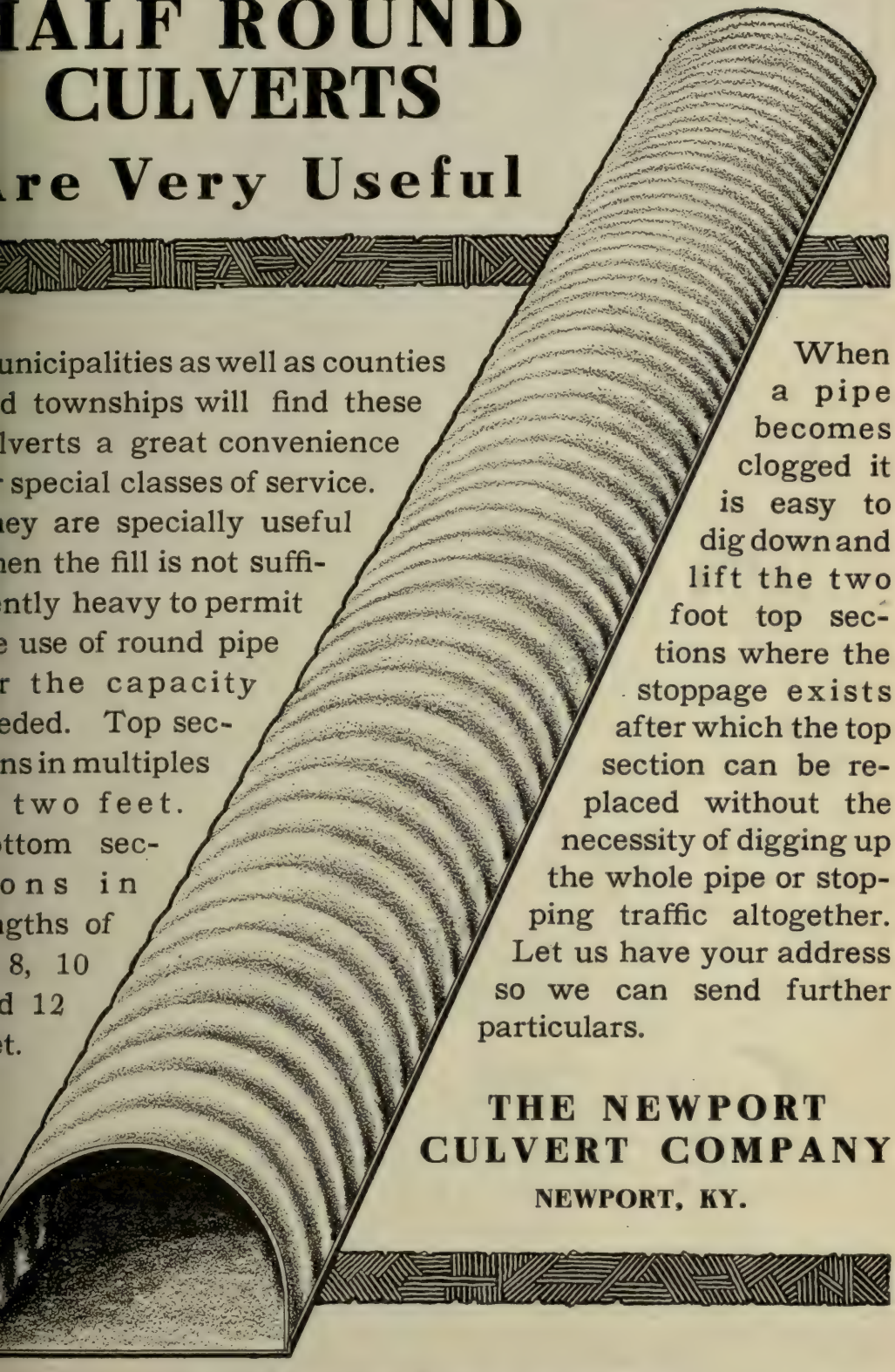
Chloride of Lime

80 Maiden Lane
NEW YORK

Holbrook Building
SAN FRANCISCO

IALF ROUND CULVERTS

re Very Useful



unicipalities as well as counties d townships will find these lverts a great convenience special classes of service. ey are specially useful en the fill is not suffi- ntly heavy to permit e use of round pipe r the capacity eded. Top sec- ns in multiples two feet. ttom sec- ons in gths of 8, 10 d 12 t.

When a pipe becomes clogged it is easy to dig down and lift the two foot top sections where the stoppage exists after which the top section can be replaced without the necessity of digging up the whole pipe or stopping traffic altogether. Let us have your address so we can send further particulars.

THE NEWPORT CULVERT COMPANY

NEWPORT, KY.

Proposal and For Sale Notices, Help Wanted and Situation Wanted Advertisements, Etc.

BIDS WANTED FOR FIRE HOSE

WILMINGTON, N. C.,

Bids will be received by the City of Wilmington, North Carolina, until 12 o'clock, noon, January 1, 1919, for One Thousand Feet of two and a half inch rubber lined fire hose.

File bids with and address communications to

L. M. BUNTING,
Purchasing Agent.

SOUTH CAROLINA STATE HIGHWAY COMMISSION

NOTICE TO CONTRACTORS FOR STATE ROAD AND BRIDGE CONSTRUCTION

Notice is hereby given that sealed proposals for the construction of highway improvements in Marion county will be received at the office of County Commissioners at Marion, South Carolina, until 12 o'clock noon December 20, 1918, and then publicly opened.

Description of Work to Be Done.

Three and one-half miles of road and bridges at Galivant's Ferry, comprising 12 pile timber bridges, aggregate length 2444 feet, requiring approximately 354,000 feet B. M. heart long-leaf pine, 26,000 pounds hardware, 475 piles from 20 to 40 feet long, 50,000 earth embankment and grading. Bids may be submitted for bridges and road work separately or as a while. Bids desired on both treated and untreated piles.

Detailed plans of the work may be seen for examination at the office of the Board of County Commissioners at Marion, South Carolina, and at the offices of the State Highway Commission, Commercial Bank Building, Columbia, turned to the bidders.

A certified check for five hundred dollars ($500), made payable to order of Board of County Commissioners of Marion County, must accompany each proposal.

The right is reserved by the party of the second part to reject any and all proposals and waive all technicalities.

Proposals shall be submitted in sealed envelopes and marked "Bids on the Construction of the Galivant's Ferry Road and Bridges in Marion County."

Proposals may be sent by mail, and when sent by mail shall be enclosed in an additional sealed envelope properly marked as indicated above.

All proposals otherwise submitted will be rejected as irregular. Only sealed bids will be considered.

All bids received will be retained by the Commission and will not be returned to the bidder.

SEWERS, CURBS AND GUTTERS

BLYTHEVILLE, ARK.

Sealed bids will be received by the Board of Commissioners, Paving District No. 1, Blytheville, Ark., and the Board of Commissioners, Curbing, Guttering and Storm Sewering District No. 1, Blytheville, Ark., until 2 p. m. January 15, 1919, for the construction of

25,584 sq. yd. concrete gutters,
42,582 lin. ft. concrete curb,
900 lin. ft. 15-in. vitrified pipe storm sewer,
700 lin. ft. 18-in. vitrified pipe storm sewer,
38,476 sq. yd. concrete paving.

Complete set of plans and specifications will be furnished by Pride & Fairley, upon receipt of $5.00. For further information apply to

PRIDE & FAIRLEY, Civil Engineers,
Blytheville, Ark.

GAS TRACTOR

HASTINGS, MINN.

Bids will be received at my office up to noon on December 16, 1918, for one Gas Road Tractor from 40 to 60 horsepower, capable of speeds from 2 to 8 miles per hour, for use on heavy road maintenance and gravel hauling. Drive wheels to have detached rubber tires.

Bidders must file a certified check for five per cent of the amount of bid payable to me and the County Board reserves the right to reject any or all bids.

P. A. HOFFMAN,
County Auditor,
Hastings, Minn.

PUMPING UNIT

GALESBURG, ILL.

Sealed bids will be received by the City Clerk of the City of Galesburg, Ill., until 5 o'clock P. M. Monday, January 2, 1919, for Deep Well Pumping Unit. Detailed information may be obtained at the office of F. M. Connolly, City Engineer.

The City of Galesburg reserves the right to reject any and all bids.

By order of City Council.

WM. L. BOUTELLE,
City Clerk.

TENDERS FOR BRIDGE CONSTRUCTION

PETERBORO, ONT.

Sealed Tenders plainly marked as to contents will be received by S. R. Armstrong, City Clerk, Peterboro, Ontario, or by the undersigned, up to 12 o'clock noon of Friday, December 20, 1918, for the construction of a Reinforced Concrete Bridge of 15 arches, with approaches, etc., over the Otonabee River, at Hunter Street, Petersboro, Ontario.

Plans and specifications may be seen at the office of R. H. Parsons, City Engineer, Petersboro, or at the office of the undersigned, 40 Jarvis Street, Toronto.

The lowest or any Tender will not necessarily be accepted.

FRANK BARBER,
Consulting Engineer.

WANTED

Secretary for Chamber of C
Salary $2,400 per year. Mus
perienced man familiar with c
in the South. Applicants must
experience, education and refere

Address J. M. LATHAN, Tempor
Cheste Chamber of Comm
CHESTER, S. C.

Motor Driven Tire F

FOR SALE

1 Sprague Elec. Lundell
direct current, 115 Volt, .5
Amp. 4.42 No. 574415.
D. R. T. .50 on frame, with
rheostat.

1 Westinghouse direct
No. 5 Type R. constant
H. P. 220 Volt 13.5 amp.16
No. 49552A. Serial No. 9053
starting rheostat.

1 Westinghouse, Direct
motor, with starting r
No. 4 Type R ¾ H.P. Shunt
850 R. P. M. 110 Volt,
Serial No. 579331.

1 Westinghouse motor, dir
rent, shunt wound No. 7
5 H. P. 875 R. P. M. 220
amp. Serial No. 432637, wit
ing rheostat.

1—Holtzer-Cabot D. C. 2
motor, amp. 8.2, speed
Comp for No. 157389.
Type C rating.

BOARD OF FIRE COMMISSI
Bridgeport, Conn.

Gamewell Equip

FOR SALE

1—Gamewell advanced typ
bination storage battery
board 10 circuit, equippe
charging rate

.4 to .8 AMP.
2. to 5. AMP.
5. to 7.5 AMP.

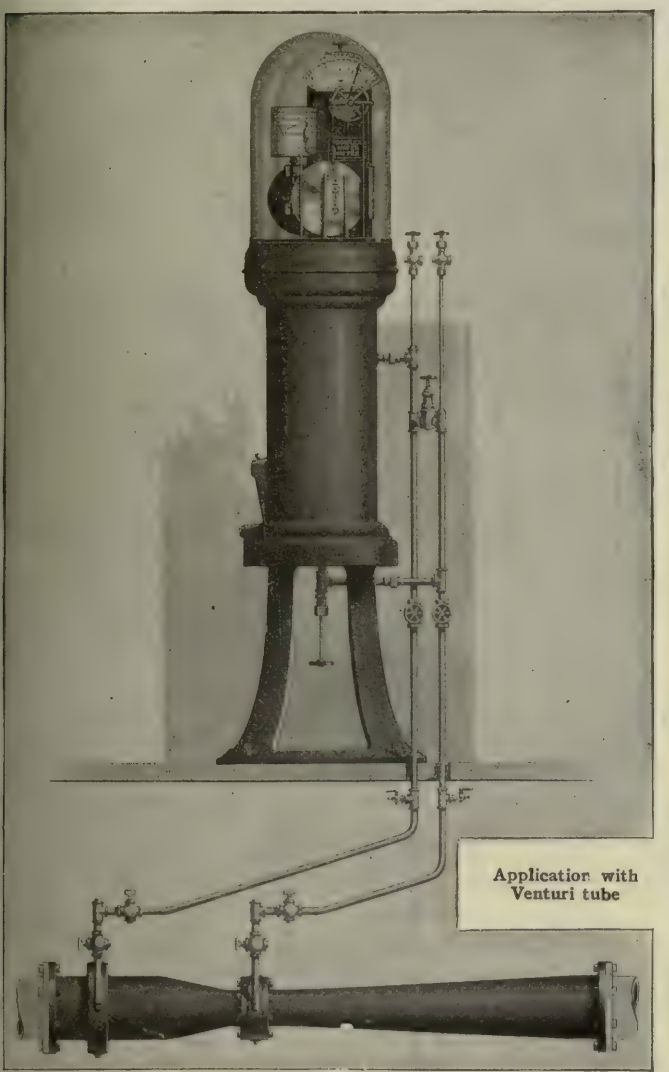
with automatic overload a
derload relay, equipped for
or 500 volt D. C. current.
switch for repeater, control,
test and individual circuit sw

1-10 circuit, non-interferin
well automatic repeater, e
with 2 closed and 5 open g
cuits on cam shaft end of re

1-20 circuit Gamewell pr
board with repeater
switches with late type of g
closed fuses and plush pro
mounted on slate and i
frame.

BOARD OF FIRE COMMISSI
Bridgeport, Conn.

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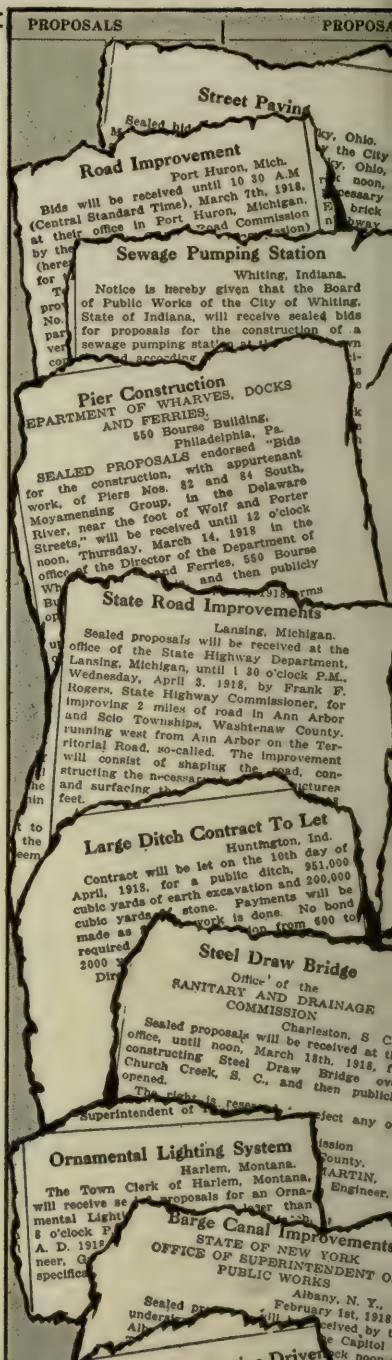
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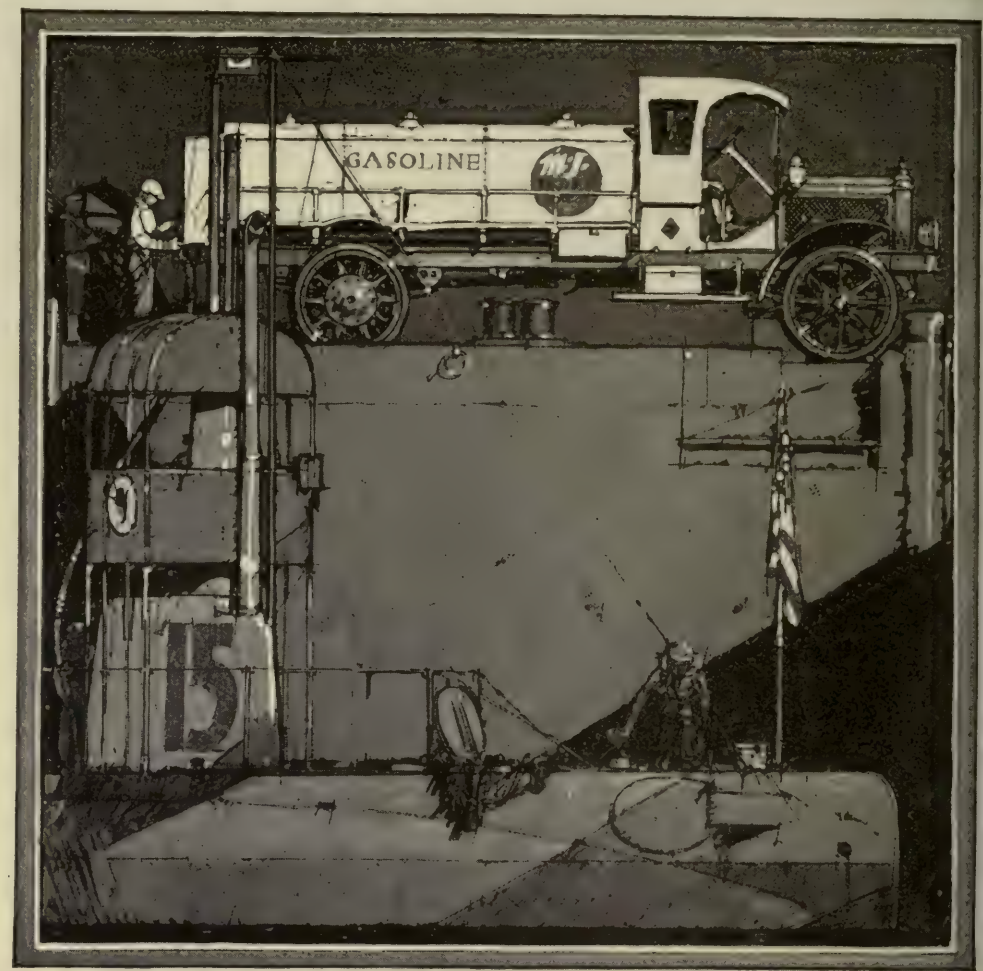
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Volume XIX
Number 6

Inter-County River Improvement in the State of Washington

Flood Control Along the White, Stuck and Puyallup Rivers

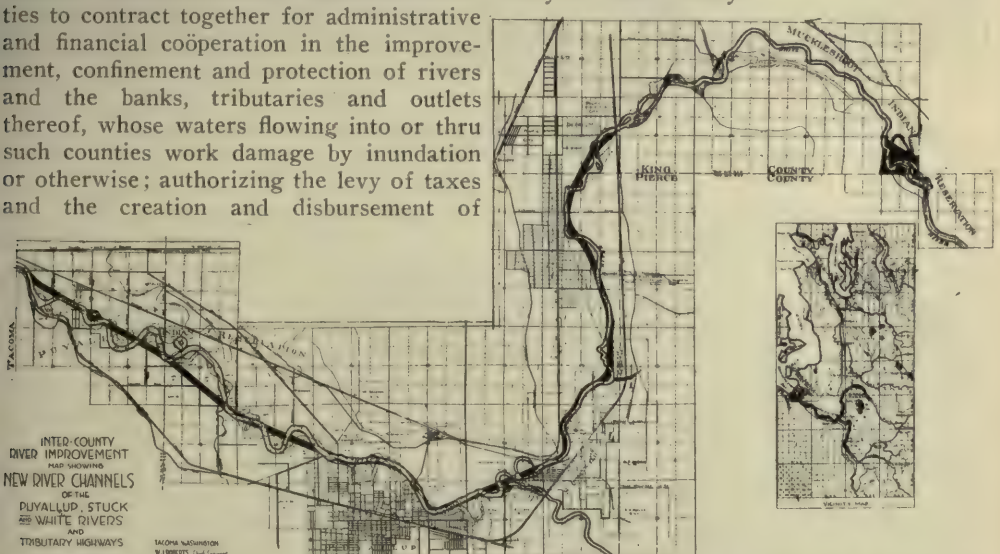
By William J. Roberts
Chief Engineer, Inter-County River Improvement, King and Pierce Counties, Washington

THE following is a brief statement of the inter-county river improvement now being carried on between King and Pierce Counties in the state of Washington, for the purpose of controlling the flood waters of the White, Stuck and Puyallup Rivers, which flow thru said counties, doing great damage to the adjacent lands at every flood period.

The Project

This is a joint county project carried on under and by virtue of an act of the Legislature of the state, which "authorizes counties to contract together for administrative and financial coöperation in the improvement, confinement and protection of rivers and the banks, tributaries and outlets thereof, whose waters flowing into or thru such counties work damage by inundation or otherwise; authorizing the levy of taxes and the creation and disbursement of special funds for such purposes, delegating the power of eminent domain in aid of, and providing generally ways and means for the accomplishment of, such purposes and the performance of such contracts."

Whenever two counties in this state enter into a contract for river improvement in pursuance of this act, as did King and Pierce Counties, the law provides that the commissioners of each county, acting jointly, shall constitute the board in charge of the project, the funds for the project being raised by a direct tax on all the property in each county.



CHANGES MADE IN THE CHANNELS OF THE WHITE, STUCK AND PUYALLUP RIVERS BY $1,500,000 INTER-COUNTY RIVER IMPROVEMENT

A chief engineer is appointed by the board and he is clothed with full authority to make all plans and carry out all details of the work.

This particular river improvement project is of great value and importance to this part of our state, as the rivers above mentioned flow thru the fine and fertile valley lying between the city of Tacoma in Pierce County and the city of Seattle in King County, which cities depend largely on the valley for their farm products.

The Difficulties of Execution

The problems with which we were confronted in this river improvement project have been many and varied. At a normal stage of water the rivers in question varied in width from 150 to 400 feet, and the gradient varied from 2 feet to the mile to 40 feet to the mile.

At the beginning of our work we found the rivers filled with drift and great log jams, which were constantly accumulating, causing severe erosion of the banks and constant changing of the channels. There were many bars and bends in the rivers that formed eddies and held the drift, and one of the first things we had to do was to remove the drift by means of donkey engines and burn it up, and in this manner we disposed of more than 100,000 cords of logs and drift before we were able to construct a new and permanent channel.

It was decided, under the plan of river improvement recommended by the Chief Engineer and adopted by the Joint Boards of Commissioners, to improve the rivers by widening, straightening, deepening and protecting the banks thereof, from the city limits of Tacoma, in Pierce County, to the center of the Muckleshoot Indian Reservation in King County, a distance of about 20 miles, as shown on the accompanying map; the right of way to be 420 feet in width, and the new channel to be 300 feet in width at the top and 170 feet in width at the bottom, with the banks on a 3 to 1 slope, leaving 60 feet on each side for levees and roadways.

In straightening the rivers, as will be seen by the map, the greatest cuts to be made were on the lower stretches of the Puyallup River between the city limits of Tacoma and the bridge at Sumner, and it was estimated that there were about three million cubic yards of earth to be removed between these points. The water in this section of the river, being affected by the tides, averaged in depth at a normal stage from 2 feet to 6 feet, and hydraulic dredging was decided upon as the most practical, economical and efficient method of doing this work.



NO. 1.—DREDGE MAKING A BIG CUT FOR THE NEW CHANNEL

The Mechanical Equipment Used

The lowest bid obtainable at that time from any of the dredging companies then in operation in this part of the country was 12 cents per cubic yard. I was satisfied that we could do much better than this by building and owning our own dredging

equipment, as several responsible contractors were ready and willing to do the work at a much less price, provided a suitable dredge could be furnished them; and that this was true was proved by the fact that after we were in shape to furnish the contractor with this complete dredging equipment we were able to get a bid of 7.3 cents per cubic yard.

The dredge as designed and constructed under my direction was a 20-inch electrically driven suction dredge, the hull being 115 feet long, 40 feet wide and 9½ feet deep, and was especially adapted to our river work.

The 20-inch centrifugal pump on the dredge is driven by a direct-connected, 800-horsepower, 3-phase, 2,200-volt motor, operated at 360 revolutions per minute, and the velocity obtained in a test run thru a pipe line 3,000 feet in length with the discharge end elevated 25 feet above the surface of the water at the dredge was 16 feet per second.

More than 2,200,000 yards of gritty material was handled by the dredge on the lower stretches of the river, and our entire dredging operations were very successful and satisfactory.

To remove the material on the bank slopes and make the levees on the lower river, a Marion steam excavator of the full revolving type was used. This drag-line was equipped with a 2-yard Paige bucket on a 65-foot boom, and a perfect slope true to line and grade was made without hand trimming or spreading.



NO. 2.—MARION DRAG-LINE FOLLOWING THE DREDGE AND MAKING THE BANK SLOPES AND LEVEES

On the upper river where the water was too shoal to admit of economical dredging, an electric drag-line with a 2½-yard bucket on an 85-foot boom was used, and this machine handled about 300,000 yards of dirt at a cost of 15 cents per yard.

At many places on the upper rivers that were difficult of access, Bagley scrapers and donkey engines were used to good advantage in grading down bars, making bank slopes and pulling material up for levees.

Considerable rich aggregate for concrete was found in the bed of the rivers, and this was taken out by means of electric hoists and drag-lines and used in the concrete paving of the bank slopes.

The plane of the rivers was lowered by our work as much as 9 feet at several places, and the entire channel capacity was increased sufficiently to carry a volume of 50,000 second-feet, which is a greater volume of water than has ever been known to



NO. 3.—CATAMARAN FOLLOWING THE DRAG-LINE AND LAYING A CONTINUOUS BRUSH MAT 40 FEET IN WIDTH AT THE TOE OF THE SLOPE



NO. 4.—ROCK SCOW WEIGHING DOWN BRUSH MAT; 1,000 POUNDS OF ROCK TO EACH LINEAL FOOT

flow thru the rivers at the most extreme flood period.

Views of the Work

The best way of explaining and illustrating our plan and method of carrying on the river improvement work on the lower river is thru the accompanying photographs numbered 1 to 5 inclusive.

No. 1 shows the dredge making a big cut for the new channel.

No. 2 shows the Marion drag-line following the dredge and making the bank slopes and levees.

No. 3 shows the catamaran following the drag-line and laying a continuous brush mat 40 feet in width at the toe of the slope.

No. 4 shows the rock scow following the catamaran and weighting down the brush mat with a half-ton of rock to every lineal foot.

No. 5 shows a gang of concrete men following the rock scows and paving the bank slopes with concrete 4 inches in thickness from the top of the slope down onto the brush mat.

On the upper stretches of the rivers, where the water is very shallow at its low stages, a different type of toe mat is used, as shown in photograph No. 6. In this type the brush toe mat is 20 feet in width and is weighted down by concrete blocks 16 inches thick, 3 feet wide and 6 feet long and laid directly on the brush mat, with old steel



NO. 5.—PAVING THE SLOPES WITH CONCRETE 4 INCHES THICK, LAID ON WIRE MESH



NO. 6.—ONE OF THE UPPER STRETCHES, SHOWING TOE MAT 20 FEET IN WIDTH WEIGHTED DOWN WITH CONCRETE BLOCKS HELD TOGETHER BY STEEL CABLES

cable running lengthwise thru each block to hold them in place.

No. 7 shows a portion of the completed new channel at the same place as shown in photograph No. 6, with the river in action at a high stage of water.

In addition to the work done on the lower reaches of the river, we have constructed a concrete-and-steel drift barrier in the narrowest part of the river canyon at a point above the limit of our channel changes and protective works.

This is a very essential and important unit of our river improvement project and fully proved its great worth during the floods of last year by catching and holding great quantities of logs and drift that would otherwise have gone down stream destroying bridges and ruining our work below.

The drift barrier consists of twenty-six concrete piers weighing 330 tons each, placed 64 feet apart across the river canyon, with two heavy end anchorages embedded in the high lands at each end. The piers are connected with steel cables fastened to heavy steel eye-bars that extend thru each pier.

Photograph No. 8 shows a section of the drift barrier under construction, and photograph No. 9 shows a part of the drift barrier in action at time of high water.

A Vast Undertaking

I will not attempt to go into details here concerning the vast amount of pioneer work that had to be done in an undertaking of this magnitude before actual construction could begin. Suffice it to say that some of the many obstacles that confronted us at the beginning in getting started with the work of new river construction seemed almost insurmountable.

The rapid fall on the western slope of the Cascade Mountains from the glacial line to the valleys below, coupled with the floating of immense quantities of large trees and other debris down the streams at every flood season, made this a unique flood problem from the beginning, and without precedent as to solution.

The original estimate of the cost of work was $1,500,000, and it was agreed under the terms of the contract that a fund should be created in each county, to be known as the "Inter-County River Improvement Fund," and that there should be raised by general taxation in the two counties the sum of $250,000 each year for six successive years.

It was also agreed that a fund, to be known as the "Upkeep Fund," should be



NO. 7.—SAME STRETCH AS SHOWN IN NO. 6, SHOWING COMPLETED NEW CHANNEL WITH RIVER IN ACTION AT HIGH WATER



NO. 8.—DRIFT BARRIER OF 26 CONCRETE BLOCKS, 330 TONS EACH, BEFORE BEING RIGGED WITH CONNECTING CABLES

provided, producing the sum of $50,000 per year for a period of ninety-nine years.

Our work on this project has attracted considerable attention thruout the country, and more than forty prominent engineers from different parts of the United States have come here to view the different units of the work on the ground.



NO. 9.—DRIFT BARRIER IN ACTION AT HIGH WATER

Secretary Houston Wishes to Push Road Work

From a Recent Bulletin of the U. S. Department of Agriculture

We should take a further step—take this step not only because of the importance of good roads, but also because of the desirability of furnishing worthy projects on which unemployed labor during the period of readjustment may be engaged. It would be in the public interest to make available larger appropriations from the Federal Treasury to be used separately or in conjunction with state and local support.

There need be no delay in the execution of such a program. The Nation has already vided the machinery in the Department of Agriculture and in the state highway commissions. The Federal aid road act was fruitful of good legislation, and each state in the Union now has a central highway authority with power and funds to meet the terms of the Federal act. The two agencies, in conjunction, have been engaged in devising well-considered road systems and in making surveys, plans and specifications. The task will be one of selection, and those roads should be designated for improvement which are of the greatest economic importance, with due regard to such military and other needs as are proper for consideration.

D. F. HOUSTON,
Secretary of Agriculture.

Keep the Main Roads Open in Winter

By George H. Biles
Second Deputy Commissioner, Pennsylvania State Highway Department

PENNSYLVANIA has a keen appreciation of the volume and character of present-day highway traffic and its demands, due to the state's important industrial position. It is felt that highway development is but beginning and that new methods, increased energy and study must be applied to meet new conditions.

Organization of the Snow-Fighting Army

Our state was put to a crucial test last winter in answering the call of the nation to keep the roads open.

The first steps taken to cope with the situation were to provide an organization to prosecute the task efficiently. This was but an enlargement of the regular force of maintenance employes. Pennsylvania has a colossal maintenance proposition in looking after the upkeep of over 10,000 miles of highways, approximately 65 per cent of which are unimproved; and with a working force in some periods of the season of over 2,000 men, it must be granted that modern business principles in organization and operation are essential.

The Division of Maintenance of the Department, composed of the assistant engineers, superintendents, foremen, caretakers, labor, etc., took complete charge of the snow removal work under the direct supervision of the Second Deputy Commissioner. From the inception of this Division in 1913, surveys and studies have been made of snow conditions, and data have been compiled that will continue to serve in good stead. There are many points where it has been developed that the construction of snow fence is the most economic practice. Considerable of this snow fence has been constructed up to the present time and is ready to be put in place. At present prices, this costs approximately 50 cents per running foot in place, and the design closely approximates the railroad standards.

On account of the war conditions, a new class of traffic had to be reckoned with, in the United States motor convoys, the imperative nature of which traffic justified some of the unusual measures taken. As an example, arrangements were made with the Weather Bureau officials to wire forecasts



ONE OF THE GREAT PLOWS THAT HELP TO KEEP THE PENNSYLVANIA HIGHWAYS OPEN IN WINTER

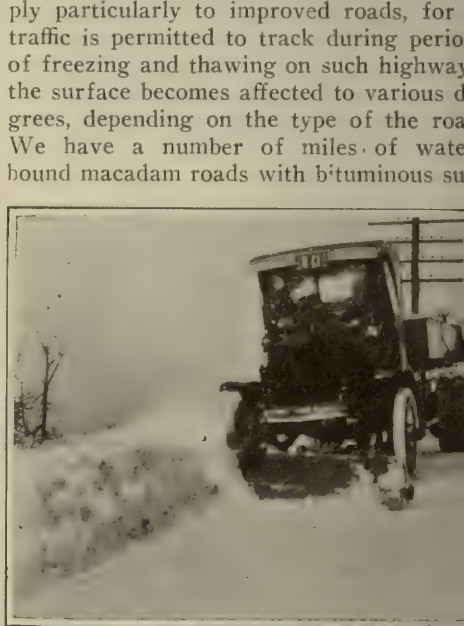
of approaching storms to the central office at Harrisburg, and this information was communicated immediately to the local forces. The War Department also wired proposed convoy movements, whose schedule was followed closely from the time they reached the western limits of the state until they passed out toward the seaboard. Stations were established along the lines of the highways at the larger towns, where motor truck equipment with snow-plow attachments, road machines, drags, shovels, etc., were located. The caretakers, or patrolmen, who were regularly employed on the road, were used as a nucleus to create the forces to handle the work. Systems of reporting were devised thru telephone, telegraph and mail, depending upon the conditions, to convey to the central office the exact status of the work at all times. This information upon receipt was charted and made available at once.

What Has Been Done Can Be Done

When one takes into consideration that a major portion of our state is mountainous and many sections are in altitudes of between two and three thousand feet, in which there are stretches of highways many miles in length where there is not a sign of habitation for refuge or shelter and travelers are entirely at the mercy of the winter elements, it seems more providential and miraculous than the work of man that such abnormal conditions were successfully overcome and traffic maintained. Aside from the dearth of labor that was felt over the whole country at this time, there were sections wherein it was impossible to get labor of any character, and the mountains and villages for miles around had to be scoured for hands, who were transported by sleigh to the site of the work. To these hardy mountaineers and men who were prompted by patriotic motives great credit is due for their sacrifices and faithfulness.

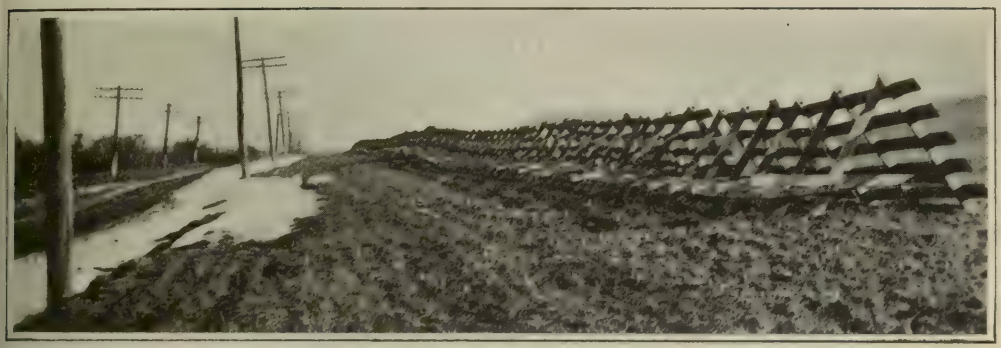
Snow removal work, from the experience of the speaker, resolves itself into snow fighting from the time the first snow makes its appearance. Work begins when heavy falls come, by breaking thru a track with road drags or small V-shaped plows drawn by teams. These are followed by the road machines or motor trucks with the snow plow attachments. Turnouts are made at convenient intervals, and as soon as possible thereafter the road is opened to t desired width of from 14 to 18 feet, d pending upon the traffic. On improv roads every effort is made to remove t snow within a few inches of the metal the road, in order that no opportunity m be given the traffic to track. What sno remains that does not melt is removed.

It should be said that these methods a ply particularly to improved roads, for traffic is permitted to track during perio of freezing and thawing on such highwa the surface becomes affected to various d grees, depending on the type of the roa We have a number of miles of wate bound macadam roads with bituminous su



THE PLOW AT WORK BANKING UP TH SNOW AT THE SIDE OF THE ROAD

face treatments on the main trunk line and in order to preserve them during suc periods it is essential to distribute th traffic. On the unimproved roads the sno is not taken off entirely down to the su face, but several inches is left remaining fo the travel to pack; and as it softens, mo snow is dragged from the sides, in order keep the surface comparatively smooth all times. Rolling of snow is done on th less important lines, but this has not bee very satisfactory on roads where there much motor traffic, on account of the roug condition that results when the surface b comes cut up. The snow, being rolled an wet from time to time with sleet and rai storms, becomes almost as hard as ic However, there are a number of roa where the travel is light and is used mostl by horse-drawn vehicles, where this metho will suffice.



SNOW FENCE IN PLACE TO PREVENT DEEP DRIFTS ON THE HIGHWAY

Special Features of the Work

In the work just described, especial attention was given to the drainage, and cuts were made thru the banks of snow to the ditch lines at certain intervals where possible, and drains and culverts were kept open and free from obstruction. This precautionary measure produced very good results; for when the snow passed away in the spring, the roads had come thru the winter in better shape than at any previous time, in spite of the fact that they had been subjected to greater traffic and increased weight of loads.

The heavy drifted condition required especial treatment. Drifts were so deep and banks so high on either side of the road in some places that snow had to be shoveled and hauled out. Snows up to 12 inches in depth can be handled advantageously with road machines, and from 12 to 36 inches, if not too heavy, can be moved with motor trucks with plow attachments, with excellent results. The truck is run along the one side of the highway and back on the opposite side at the rate of about 4 miles per hour, and carries a small crew of men with shovels that are used when the snow piles up in front of the blade—which it will do, especially when the snow is wet. When there is a greater depth than 3 feet, a large A-shaped plow is used. This implement is 30 inches high at the nose and 6 feet at the back, with 20-foot legs and 16 feet wide at the back, held together with movable braces and drawn by a heavy tractor. It has proved a very economical and effective device. The movable braces are provided for the purpose of permitting vehicles to pass during the operation, if this is necessary. The light tractors for this work do not hold the road, and have been found unsatisfactory. Mechanical devices are preferable in the majority of cases, but if the drifting is a continuous performance in cuts, it resolves itself into a shoveling proposition.

To keep the roads open under conditions similar to last winter costs from $50 to $200 per mile, depending upon the location and other conditions.

In 1912, when our system of roads was taken over for maintenance, the highway laws with respect to keeping up the road were not generally interpreted to mean that snow should be removed, and it had been an uncommon thing for the local road officials prior to this time to open the drifts. In many places, the fences along the line of the highways were removed and the fields were used until the snow passed away. In cases when thaws caused the fields to become soft,—in which condition the traffic would do them considerable injury,—some effort was made to make the roadway passable. This era quickly passed, and with the changing and increased traffic the demands became great for an open highway the year round. In 1913 this responsibility was assumed by the State Highway Department, and practically all the main trunk lines were kept open from this time on.

I firmly believe that wherever statutes are needed to attain this end, the legislative bodies should pass enabling measures at once. We have a case on record of one of our highways when the temperature was down to 25 degrees below zero, and an actual traffic census showed that over two thousand vehicles passed over the road in twelve hours.

How Highways Affect Motor Transport Efficiency*

By Arthur H. Blanchard

President, American Road Builders' Association and the National Highway Traffic Association

THE efficient development of highway transportation thru motor truck parcel post service, return load bureaus, inter-city freight delivery, rural express and other methods of motor transportation, necessitates the utilization of highways during 365 days of the year and the construction and maintenance of good roads everywhere.

The Financial Feature of the Problem

The practical development of this program calls for the expenditure of vast sums of money—at least one billion dollars annually. The cost of the highways of the future is problematical. An indefinite period will elapse before the wages of labor and the cost of materials will be adjusted to normal conditions. These economic questions constitute a problem which must be given exhaustive consideration. One phase, upon which it is advisable for all to deliberate, is the sources of the unskilled labor so largely used in highway improvement. The World War has materially reduced the available supply in this country, and the reconstruction of Europe will prevent the usual additions thru the avenue of immigration. The belief is rapidly growing that the solution is the importation of Asiatic labor.

To-day there are in the United States 2,500,000 miles of rural roads, twelve per cent of which are classed as improved. A conservative estimate would indicate that not more than one-fourth of one per cent of the total mileage is suitable for motor truck trunk highway traffic. During 1917 there was appropriated for the improvement of rural roads $300,000,000. This work is under the jurisdiction of the Federal Government, the state highway departments, over 3,000 counties in the various states, and the innumerable townships. It is well to strongly emphasize the indisputable fact that it is reckless financing to use fifty-year bonds to construct roadway surfaces which will have a life of only ten years.

The Demand for a Federal Highway System

To-day there is no national system of highways in the United States comparable to the world-renowned national system of France. Indications point, however, to a rapidly developing sentiment and demand for the creation of a system of interstate highways aggregating between 50,000 and 150,000 miles which shall be constructed and maintained under the supervision and at the expense of the Federal Government.

Efficient and economical highway improvement has been seriously jeopardized in the United States thru political interference and the placing of highway work in the hands of laymen who have had no experience in this important technical profession. The people must be educated with respect to the complex work for which highway officials are held responsible and to the waste of public funds directly attributable to having highway work in the hands of laymen. It should be emphasized that the primary objects of the educational campaign advocated are: first, the economical and efficient expenditure of the millions of dollars annually appropriated for highway work; and, second, the appointment of members of the highway engineering profession to the innumerable positions of responsibility in public life which demand the combination of administrative ability, honest character, and the technical knowledge, training, and experience possessed by qualified engineers.

Foreign Practice in Highway Engineering

As in the case of many public activities, it is practicable in connection with this problem to derive valuable suggestions from practice in foreign countries. A review of their histories indicates that they have passed thru the same transition period

* From an address on "Relation of Highways to Motor Transport Efficiency," delivered on November 22, 1918, before the Conference on Modern Methods of Motor Transportation, in New York City.



FAILURE OF BITUMINOUS PAVEMENT DUE TO POOR FOUNDATIONS

which we are entering. In France, many years ago, the people and the servants of the people realized the advantages accruing from the establishment of a permanent organization of efficient, well-trained highway engineers, and hence there was created the renowned Department of Roads and Bridges of France. Passing across the English Channel, we find similar conditions in Great Britain. In order to secure a dollar's worth for every dollar expended, the British public realized that it was necessary to have in control of their public works men trained in a profession directly dealing with every economic and engineering phase of public improvements. It has therefore



THE FRENCH ROAD-BUILDERS HAVE LEARNED THE IMPORTANCE OF PROPER FOUNDATIONS, AS ILLUSTRATED IN THE 24-FOOT ROADWAY IN FRANCE SHOWN ABOVE

inaugurated the practice of requiring that applicants for a given municipal or county position shall have attained the grade of membership in the Institution of Civil Engineers of Great Britain commensurate with the responsibility of the work of the particular office. Many leading municipal and county positions require that the applicant shall, first of all, hold the highest grade of membership in the Institution, while positions in small counties, towns, and districts require in many cases associate membership.

It would seem desirable in this country that a step along the line of English practice should be taken, and, in the case of positions of highway officials, that there be incorporated in the constitution of a state or the ordinances of a city the stipulation that the applicant shall hold a certain grade of membership in the American Society of Civil Engineers and have had a certain number of years of experience in highway work.

The Effect of Motor Truck Traffic on Highway Construction

With the enormous development of motor truck highway transportation which this country is to witness in the next five years, many established practices in highway work must be remodelled. It is self-evident that the increased tonnage will call for ideal drainage, strong foundations and roadway surfacings suitable for motor truck traffic. In this connection may be cited the recommendation of the former New York State Department of Efficiency and Economy, in 1915, that all trunk highways should be built with cement-concrete foundations. Dependent upon the amount and character of the traffic to which a trunk highway will be subjected during the life of its surface, and other factors influencing its selection, the following types are suitable: bituminous concrete, cement-concrete, brick, and stone block.

Reviewing the construction of the last few years of the types of pavements heretofore mentioned, used on trunk highways, it is found that the widths vary from 12 to 18 feet, with a few instances of greater widths. In this connection it is of value to note that the Highway Committee of the American Society of Civil Engineers recommended several years ago that "where motor trucks form a considerable portion of the total traffic likely to use a highway, the unit width of traffic lines should be considered as 9 or 10 feet, instead of 7 or 8 feet as heretofore." Furthermore, as far back as 1908, the First International Road Congress, held in Paris, adopted this resolution: "There should be but one roadway for every kind of vehicle, 19 feet 8 inches wide at least." It is, of course, well known that many of the main county highways of England have an improved surface of from 20 to 22 feet and that the main trunk highways of France are practically 24 feet in width. When the rapid development of touring-car, motor-truck traffic and motor-bus routes is given consideration, it is obvious that our important inter- and intra-state trunk highways should have roadway width of not less than 20 feet.

Other factors in highway construction which must be given careful consideration during the next few years are strengthening of highway bridges, grades, location and alignment of highways, adequate guard-rails, and uniform highway signs.

The Importance of Maintenance

Some method must be devised by which the legislatures shall annually appropriate sufficient funds to properly and economically maintain improved highways. It should be borne in mind that if maintenance is curtailed in one year in a given state to the extent of $500,000, and miles of highways are thereby left unrepaired, the appropriation required in the following year to repair the damage to the highways not maintained may amount to a million dollars.

It is of vital import that uniform highway traffic laws should be placed on our statutes. Such laws must cover the physical factors and the operation of all types of vehicular traffic. Laws will be based on available data and opinions. There are, at present, innumerable investigations which should be made, to ascertain facts pertaining to the inter-relationship of motor truck traffic and the durability and serviceability of highways. If such investigations are not conducted by highway departments, they should be undertaken at once by motor truck interests. If the essential data are not available, traffic laws will naturally be based upon conservative conclusions reached by highway officials and legislators.

Proper Engineering Treatment of Necessary Railroad Grade Crossings*

By Rodman Wiley
Commissioner of Public Roads of Kentucky

WHEN travel was mostly by steel-tired vehicles, the danger at crossings was at a minimum, and naturally the question did not receive, and was not expected to receive, the consideration it does to-day, when most men are endeavoring to save time and make money, and the majority of travel is by automobile and automobile truck. In order to take care of this new method of travel, the highways are now carefully planned; particular care is being taken to see that the proper type of surfacing is used; wide, strong and expensive types of bridges are being built; but the grade crossings are receiving practically no attention.

The Establishment of Crossings

It has been customary for some years when one railroad crossed another railroad company's track for the one desiring the crossing not only to receive permission from its senior but to furnish the necessary frogs and install all interlocking signals. The same is true when interurban lines cross railroad tracks.

We know it is impossible to span a navigable stream with a highway or railroad bridge without first receiving a permit from the Federal Government. The Government specifies the length of span and the height of the bridge above low water; in other words, the Government appreciates the fact that neither of the other two systems of transportation shall interfere with the safe passage of boats; yet until very recently it was almost unheard of for highway officials to be consulted when a road was to be crossed by railroad, interurban or street car lines. In many instances such crossings have been established without even installing danger signals.

Statistics show that the railroad companies pay out considerable sums of money because of accidents and deaths at grade crossings. Naturally such corporations, endeavoring to reduce their expenditures to a minimum, and especially to save human lives, have installed all sorts of safety devices, a great many of which are absolutely ignored by the public. We now find stationary electric bells in some cases, swinging electric bells in others, and electric lights, and, finally, at the most important places we see gates and watchmen.

Considered from a purely financial standpoint, very few railroad crossings are properly maintained so as to prevent a machine from being damaged each time it passes over one. Suppose that the damage to a machine amounts to only one cent and that a hundred machines pass that crossing in a day. That means that damage has been done to the extent of $1 per day, $30 per month, or $360 dollars per year, which is the interest on $6,000.

I take it that grade crossings are considered necessary because of great difficulties which would be encountered in eliminating them, such as the topography of the country, rights-of-way trouble, damage to property, and, in the final analysis, lack of funds, because certainly the majority of crossings are unnecessary provided the money is available to eliminate them.

Human Carelessness

There will always be accidents so long as we have grade crossings. Anything that is done to improve them is an insurance against death or accident, and the first question naturally is, who should pay the bills?

We find that when a highway or railroad company crosses a navigable river, the company pays the bills, and when one railroad company crosses another, the junior company pays the bills; the same is true when interurban lines cross railroad tracks. One would naturally think that the railroad grade crossing question should be handled in the same manner. The railroad company, however, being a corporation, is liable for damages and should, and perhaps would, in most cases be willing to pay part of the

* From a paper delivered before the American Association of State Highway Officials.

cost, even tho it might have priority claim at the crossing. But if the people are determined to travel at a rate of speed so great that their lives are more in danger than they were when most grade crossings were allowed to come into existence,—and especially when human nature and human carelessness enter so much into the proposition,—the public should pay some part of the cost. It should be remembered that the people, not the railroads, have changed their method of travel.

No two men behave exactly in the same manner when crossing a railroad track. A few will stop and listen for approaching trains; others will slow up their machines and look hurriedly to the right and left; but the majority will plunge headlong over the track without taking any precautions whatever. Certainly no company should be penalized for lack of attention paid to all warnings, especially when the railroad is a necessity and is rightfully allowed to exist under the laws of the country.

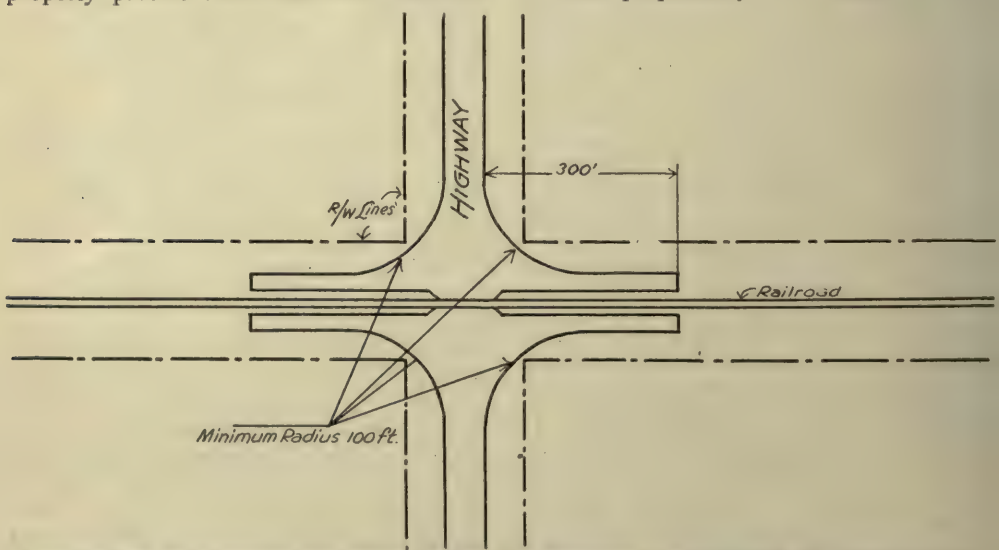
The highest courts in many of our states have refused to give judgment against railroad companies because the drivers of automobiles have not exercised reasonable precautions in crossing railroad tracks. It is a question of human life against money, and I venture to say that very little will ever be done until the public appreciates the value of a human life. All sorts of excuses will be given and accepted because in order to properly protect their own lives and the lives of their fellow men the people would have to pay a little more taxes.

Recommendations for Eliminating Danger

Some engineers after carefully studying the question have recommended that the highway on each side of the railroad track should be made straight and level for some distance back of the track. That, of course, is a great precaution, and would tend not only to prevent collisions with trains but also to prevent accidents on the highways, as sufficient sight distance would be provided. Others recommend all sorts of electrical devices and interlocking signals to give warning that a train is within a certain distance of the crossing.

All electrical devices, however, are liable to get out of repair, and in isolated districts they might not receive attention for many days. In such cases, no warning would be given in the interim, so we cannot depend entirely upon these protections.

Considerable danger could be removed if a great many of the roads were relocated, and that could be done in many instances. Where a road parallels a railroad for some distance before crossing, the road should, if possible, be at least 300 feet from the track, and the crossing should, if feasible, be made at right angles to the track. In addition, all obstructions to the view should be removed, so that when a driver makes the turn preparatory to crossing the track



METHOD OF PROVIDING TURN-OFF SPACE TO PREVENT COLLISIONS AT RIGHT-ANGLE GRADE CROSSING

he can see for some distance both ways up and down the railroad.

As an added precaution, it would be well to build a road parallel to the railroad track for a distance of perhaps 300 feet each side of the main road, and, in all probability, it should be on the railroad company's right-of-way. The surface of the road should be at the same elevation as the top of the rails; in case a man saw he could not clear the track, or, in other words, that he was caught, he could turn either to the right or the left, off the main highway, run his car parallel to the track and prevent a collision.

Important crossings should be well paved, the paving to be level with the top of the rails so as to prevent a man from killing his engine on the track, also to save the wear and tear on vehicles. Less important crossings could be paved with timber, say, 2 inches thick, set on edge, sized so as to make it level with the top of the rails, the timbers to be nailed to the ties and to each other, and all points of contact to be tarred. This would make a rather inexpensive improvement, and it is believed the results would be admirable, as 2 x 4's spiked together and tarred have been used very successfully as flooring for bridges in Kentucky.

Inasmuch as crossings might be divided into several classes according to their hazardous nature and the volume of traffic passing over them, it might be well for representatives of the railroad companies in the various states to meet with the proper highway officials, take a census of all crossings and divide them into classes. At the most hazardous crossings or those otherwise important from the standpoint of travel, in addition to doing all that has been said, it might be well to have gates and watchmen.

Sufficient precaution should be taken in the way of making such changes as have been advocated, or else the driver of a vehicle should be required to stop and, himself or one of the other occupants of the vehicle, be obliged to walk across the track before attempting to drive across.

A street intersection in a busy town might be considered a necessary grade crossing. It is not, of course, in all cases a railroad crossing, but is subjected to a great volume of traffic. Soon after the advent of the automobile, the police departments in practically all towns had watchmen stationed at the intersections to take care of the traffic.

An examination of the practice of street car companies and interurban companies in crossing railroads shows that almost invariably the street cars or the interurban cars are required to stop on the near side of the track and the conductor crosses the railroad track and signals the car ahead.

I know that complaints would be made by autoists because of losing the time required to stop their machines and walk across the tracks, but when a man attempts a journey in an automobile he is aware of the fact that he will, in all probability, have punctures and blow-outs and he is willing to takes his chances in order to save time and to travel when it suits his convenience. If he is willing to repair two or three punctures in the course of a journey in order to go as he pleases, he should not complain if a few minutes of his time are taken up in endeavoring to save his life.

The public should appreciate the fact that no precaution on the part of any railroad company will save a man's life if he is determined to be a fool. Men know that insurance is a good thing, but oftentimes it is neglected and they die and leave their families penniless. So with railroad crossings; they are dangerous and always will be dangerous, no matter what precautions are taken, and men permit this danger because in order to safeguard their lives they would have to take a little more time and spend some money. All recommendations will amount to naught until it is appreciated that the highways are one of the great systems of transportation and are entitled to the same consideration as other transportation systems; until the people are ready and willing to place the roads under proper engineering supervision and act on the advice of engineers in everything connected with the system; and, finally, until the people appreciate the fact that the expenditure of almost any sum of money is desirable if it prevents the loss of a single human life.

Bridges That Were Not Built for Permanence



THE SORT OF BRIDGE CONSTRUCTION SHOWN ABOVE LEADS TO THE SORT OF BRIDGE DESTRUCTION SHOWN BELOW



Forest Fire Prevention in North Carolina

Methods of Preserving an Important and Valuable Public Asset

THE people of North Carolina are gradually awakening to the fact that more effective measures of forest ire fighting are an essential step towards afeguarding the future welfare of the tate. A report by the North Carolina eological and Economic Survey on the estruction of property in the state by orest fires during the years of 1915, 1916 nd 1917, together with a sketch of what as been done *and what has not been done* o combat this evil, should go far towards onvincing those who still remain skeptical hat an annual appropriation for this purose is a vital necessity.

As is well known, the forests of North arolina constitute one of its greatest acial and potential resources. Roughly peaking, 75 per cent of the Mountain egion, 50 per cent of the Piedmont region, nd 65 per cent of the Coastal Plain region re forested. As was stated by the *Greensoro Daily News* on February 20, 1917:

"If North Carolina were a private corporaon, it would be expending millions upon the orests within its area. It would be setting side entire stream basins in the Mountain nd Piedmont sections for experimental chemes, to determine to what extent stream ow and other factors of agriculture may be ontrolled thru conditions at the headwaters. t would be reforesting all untillable lands as apidly as possible, and all timber areas would e so adequately guarded that fires would be ractically unknown."

Let us compare this with what has acially been done in North Carolina:

The report of the Geological and Ecoomic Survey shows that during the years 909 to 1917 the average annual damage rom forest fires was $950,000, while during ie spring of 1916 alone the damage mounted to nearly $3,000,000! The folowing newspaper report gives a good idea f the conditions prevailing in nearly all arts of the state during the latter part of pril and the early part of May, 1916:

OREST FIRE IS RAGING IN McDOWELL COUNTY

AS SPREAD TWENTY MILES AND DESTROYED NUMEROUS BUILDINGS

MARION, N. C., April 23.—A forest fire, riginating at or near Hankins, covering in idth several miles, has been raging for twenty-four hours in McDowell County, and already has extended twenty miles towards Burke County. A church, a school building, a large mill and a dozen farmhouses have been burned. It would be impossible to estimate the timber loss. A call reached Marion last night for help to fight the fire, and many automobiles loaded down with fire-fighters were rushed to the country, but the fight was altogether in vain. Nothing but rain or some wide stream of water can stem the raging torrent of fire.

—*Asheville Citizen*, April 24, 1916.

A Forest Fire Law, passed by the Legislature in 1915, provides:

1. That the State Geological and Economic Survey shall be charged with the duty of the prevention and control of forest fires in the state;
2. That the State Forester shall be State Forest Warden and shall administer the law, with the approval of the Geological Board;
3. That he shall appoint and have supervision over township and district wardens in such townships as he may deem necessary;
4. That these forest wardens shall, in their various districts, have charge of measures controlling forest fires, etc.; that they shall be empowered to arrest offenders and to require outside assistance in fighting forest fires. They are to put up posters warning against forest fires, these posters to be provided by the State Forester, and are to be supplied with suitable badges.

The 1915 law is a good one, but is rendered futile because no money has been available for its enforcement. In 1917 it was proposed that an annual appropriation of $20,000 be made for the purpose of carrying out the provisions of the fire protection act. Considered purely and simply as an investment, the experience of other states would indicate that this appropriation would pay enormous profits to the state; $20,000 is an inconsiderable sum compared with an annual fire loss running over $900,000. Forest fire losses would have to be cut down only one-twentieth to prove the $20,000 per year a splendid investment. Notwithstanding the fact that public opinion, as represented by interested organizations and the leading newspapers of the state, was strongly in favor of this measure, no action was taken by the Legislature beyond a mere rhetorical addition to the statute books.

Despite the fact that a state appropriation has been lacking, the Geological and Economic Survey, with the help of its own very limited funds, has done all it possibly could do to carry out the letter and spirit of the law. The principal features of the work at the present time are the printing and distribution of posters, the appointment of State Forest Wardens, and the coöperation with the Federal Government and with local fire protective associations in the appointment and direction of Federal patrolmen and oversight of such associations. The Federal Government, under the Weeks law, has coöperated by providing as much as $1,000 and not more than $2,000 a year for the payment of patrolmen. If an appropriation can be secured from the State Legislature, a large increase in the apportionment from the Federal Government is promised.

Since the passage of the new Forest Fire Law and up to the present time, the Geological Board has caused to be printed and distributed a thousand or more copies of each of thirteen posters warning of forest fires. Opposite is a reproduction of one of these posters, which is available to any citizen of the state who will post it in a conspicuous place.

The Survey has also compiled a table of causes, which is of value because it calls attention to the overwhelming proportion of fires due to carelessness. It is estimated that 95 per cent of all the forest fires in North Carolina are the result of carelessness, and *could with proper precautions be prevented.* The table of causes is appended:

Causes	Average Percentages for 1915, 1916 and 1917
Brush burning	28
Unknown causes	20
Railroads (sparks from locomotives, etc.)	17
Lumbering	13
Hunters and campers	12
Incendiary	5
Miscellaneous causes (known but not classified under any of above heads)	4
Lightning	1

The most startling fact brought out by this table is the very large proportion of matter comes up before the Legislature c fires set by carelessly burning brush. Th state law regarding this (see poster repr duced herewith) is about as strong as it ca be made, yet practically no prosecutio have been made under it. This is becaus the state has been unable, owing to th absence of funds, to appoint wardens fc securing evidence and bringing such actio

It is confidently hoped that an appropri tion adequate to enforce the provisions c the Forest Fire Law will be made when thi

DO YOUR BIT!
Help Keep Fires Out of the Woods

Use the Utmost Care in burning brush and rubbish

Have Sufficient Help when burning new grounds

Do Not Burn in DRY, WINDY WEATHER

The New State Law reads:

Section 10. All persons, firms, or corporations, who shall burn any tar kiln or pit of charcoal, or set fire to or burn any brush, grass, or other material, whereby any property may be endangered or destroyed, shall keep and maintain a competent and careful watchman in charge of said kiln, pit, brush, or other material while burning. Any person, firm, or corporation violating the provisions of this section shall be punishable by a fine of not less than ten dollars nor more than fifty dollars, or imprisoned not exceeding thirty days. Fire escaping from such kiln, pit, brush, or other material while burning shall be prima facie evidence of neglect of these provisions.

...THE STATE FORESTER

Poster No. 13 **Chapel Hill, N. C.**

Commercial Printing Company, Raleigh

1919. The case is very simple. The state has the laws. It should expend the money needed to enforce these laws. There is no doubt that the money thus expended will be saved to the state many times over, and that the forests, protected from destruction, will be of untold value to present and future generations.

The city officials and Chambers of Commerce near the forest districts can do much by forming associations to secure appropriations by the legislatures of this and other states to protect the forest industry, so vital to the world to-day.

The Importance of Increased Efficiency in Highway Transportation

THE first Highway Congress in the history of American road building opened in Chicago on December 11 under the auspices of the American Association of State Highway Officials and the Highway Industries Association. Practically every state in the Union was represented.

Lieutenant-Colonel Wm. D. Uhler, President of the American Association of State Highway Officials, opened the Congress. An address of welcome was delivered by Governor Frank O. Lowden. Responses were made by Edwin S. Duffey of New York, for the Association of State Highway Officials, and S. M. Williams, of Ohio, as President of the Highway Industries Association. In his response, Mr. Williams said:

"When one of our leading publications recently stated that the highway industries can well afford to ignore entirely any thought that in working for good roads they are working in their own interests, but that they are working for the interest of the nation, and every mile of good road built adds to the sum of human happiness and to the nation's ability to utilize its resources for the production of foodstuffs and for increasing its manufacturing facilities, they expressed the same thought and purpose which caused the highway industries of the United States to come together in the organization of the Highway Industries Association about one year ago.

"The highway industries of the United States, representing invested capital of more than two billion dollars and more than one million wage-earners, sincerely and honestly believed it was their patriotic duty, rather than a selfish privilege, to urge that 'Highways must be aggressively advocated as essential to the nation's life.' This duty was magnified by the recent statement from Herbert C. Hoover, Federal Food Commissioner, that 50 per cent of the perishables produced in America are wasted largely thru ineffective means of getting them to market. He also predicted that the food shortage would become more serious in the United States after the war than during the war and therefore urged the importance of increased efficiency in highway transportation.

"We are all here believing that we have reached a point in the life of our country when it is the duty of all to call a halt in the neglect of our highways, and to urge upon those in authority a realization of the penalty that we as a country are paying for our neglect."

Hon. James I. Blakslee, Fourth Assistant Postmaster General, spoke on "The Development of Motor Parcels Post Routes." Mr. Blakslee went straight to the condition of the road as the underlying cause of ascending prices of foodstuffs.

"The cost of living," he declared, "continues to increase. To provide direct avenues of conveyance—essential to the proper distribution of produce and merchandise—would necessarily require thousands of additional perambulating units, using highways, railways, waterways, and airlines, each available and adaptable in its sphere for efficient service.

"Where the railway should be used, use it. Where the waterway should be used, use it. Where the airway should be used, use it. And where the highways should be used—well, that is where *we* do business!

On December 12 the following resolution regarding the endorsement of a Federal highway system was adopted:

Whereas, the President of the United States in his recent message to the Congress, recognized the value of improved highways in the general transportation system of the nation and definitely recommended and urged their rapid development; and

Whereas, this work is necessary to give employment to our returning soldiers and also to furnish worthy projects on which unemployed labor can be engaged during the period of readjustment; and

Whereas, we recognize the necessity for a well-defined and connected system of improved highways in order to expedite the distribution of large volumes of foodstuffs now wasted on account of the lack of prompt and adequate highway transportation, and to better serve the economic and military needs of the nation.

Therefore, be it resolved, that a Federal Highways Commission be created to promote and guide this powerful economic development of both highways and highways traffic and establish a national highways system.

Be it further resolved, that the present appropriations for Federal aid to the states be continued and increased and the states urged to undertake extensive highway construction so as to keep pace with the development of this country and its transportation needs, and that in carrying out the provisions of the present Federal Aid Act or any amendment thereto the state highway departments shall coöperate with the Federal Highways Commission.

Be it further resolved, that all governmental activities with respect to highways be administered by the Federal Highways Commission.

Mobilizing the Rural Community

"When a community thru organization has succeeded in enlisting the enthusiastic coöperative efforts of its citizens in wise planning and efficient accomplishment, then, and not till then, will the welfare and progress of that community be assured"

WHAT is the probable future of your town? Is there a good, live, aggressive community spirit among the people? Do the people think the town is a good place in which to live and earn a living? Are farmers in your vicinity making money? Is your town taking advantage of the assistance which may be obtained from various sources, such as your Farm Bureau, the County Y. M. C. A., the Boy Scouts, the State Board of Education, and the Agricultural College? Has there been worked out a definite, practical, comprehensive plan for the development of your community which will guarantee solid, substantial growth?

Many of our cities have adapted themselves to the new and changing industrial conditions as they have appeared. Our rural communities have not done this, consequently many of them appear to be losing ground. Rural community organization is the most effective way of bringing about a practical development of the common interests of the community. No task of reconstruction in America or elsewhere will be more vital than the task of rural community building, for unless we can organize, develop and maintain strong local rural communities, which are more or less self-sufficing, we cannot adequately develop our agriculture and country life.

Many efforts at progress have failed because the whole job to be done had not been taken into account. Almost every town is doing one or two good things, but there is generally lacking a well-balanced movement which takes account of all interests of the community and in a businesslike way brings about the development of each.

The need, then, may be thought of as:

1. A get-together of local groups for mutual understanding and appreciation of the work to be done
2. A practical, comprehensive, accurate plan for future development, worked out by the people of the community, this plan to be based upon actual needs
3. The applying of this long-term plan or program as fast as local circumstances will justify

What Has Been Done in Some Communities

Massachusetts was probably the first state to give attention to this work in an organized way. The development here has been primarily agricultural and has had a natural growth. It was started some eight or nine years ago in one community which with the assistance of the Agricultural College, undertook a thoro organization of its affairs. In Massachusetts, where most towns have a number of local organizations a form of joint committee or community council is being used. The council leads community committees in a thoro study of the town and in the working out of a three to five-years' plan or program of town development, made up of specific projects in farm production, farm business, conservation, boys' and girls' interests, and community life, i. e., education, the home, public health, civic affairs, recreation, transportation, etc. The carrying out of this program is done by the local organizations cooperating thru the council.

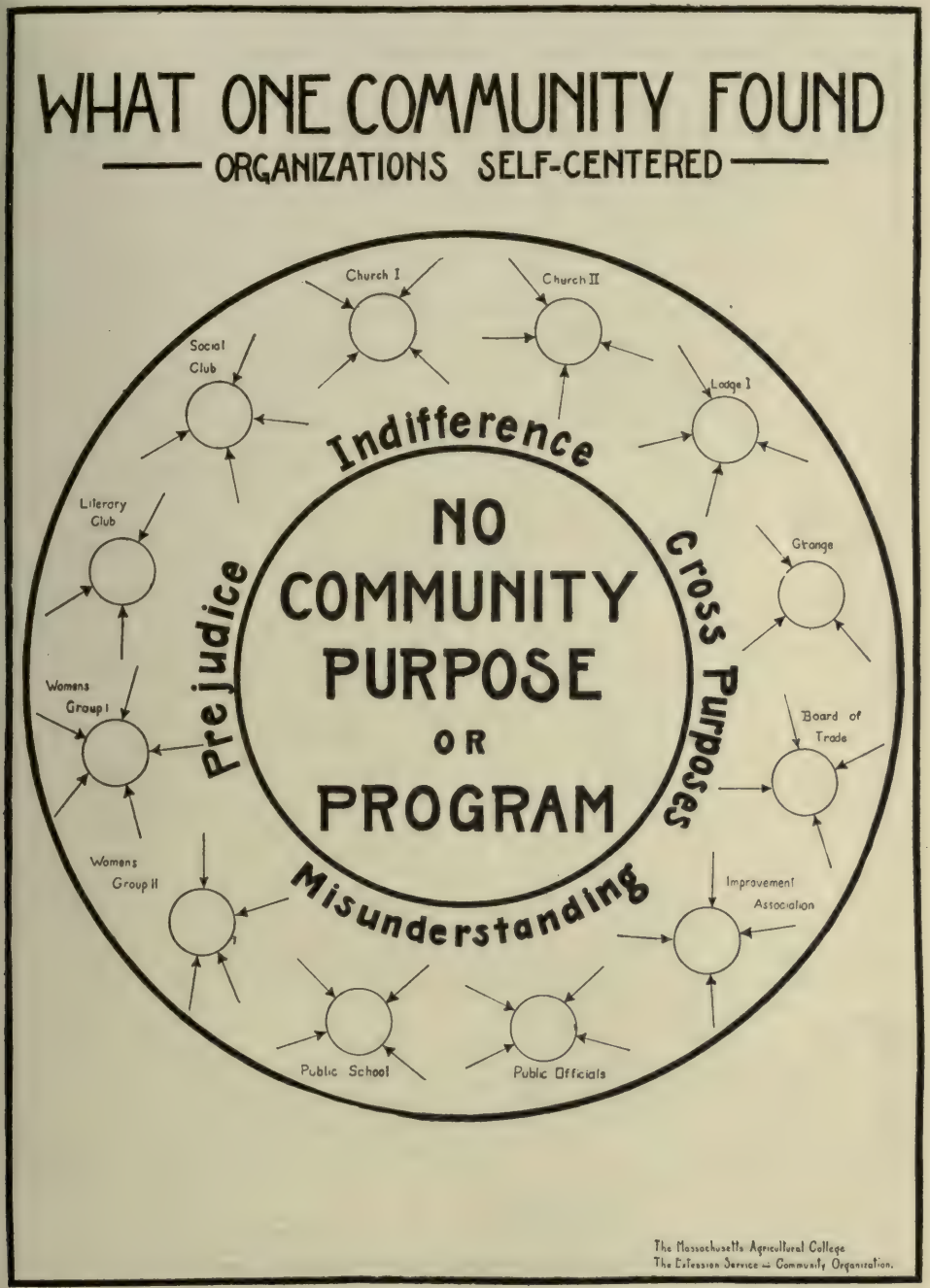
The following are only a few of the many accomplishments reported by six of these Massachusetts townships:

1. "The local organizations of the community came together for mutual help and planning thru a community council."
2. "An all-year-round program of agricultural institutes, lectures and demonstrations was a stimulus to agriculture."
3. "A coöperative buying and selling association was organized among farmers in 191. and has been of great value to the town."
4. "An orchard pruning and spraying campaign which reached most of the orchards in the town was started. The result was a new and lasting interest in fruit growing."
5. "A road development plan was adopted which provided for the opening of some new roads, the closing of others, and the care and maintenance of all."
6. "A local committee raised funds to purchase a fire truck, which has reduced the insurance rates for the town."
7. "A landscape architect was secured to plan the development of the common. A plan was adopted and is being carried out."
8. "We have organized a Home-Making Club in which the women of the town meet to study the various problems connected with the home."

9. "Organized play and recreation was arranged for the children under paid leadership."

10. "Provision was made for boys' and girls' club work. This has included garden, canning and home-making clubs, Boy Scouts, Camp-Fire Girls, etc."

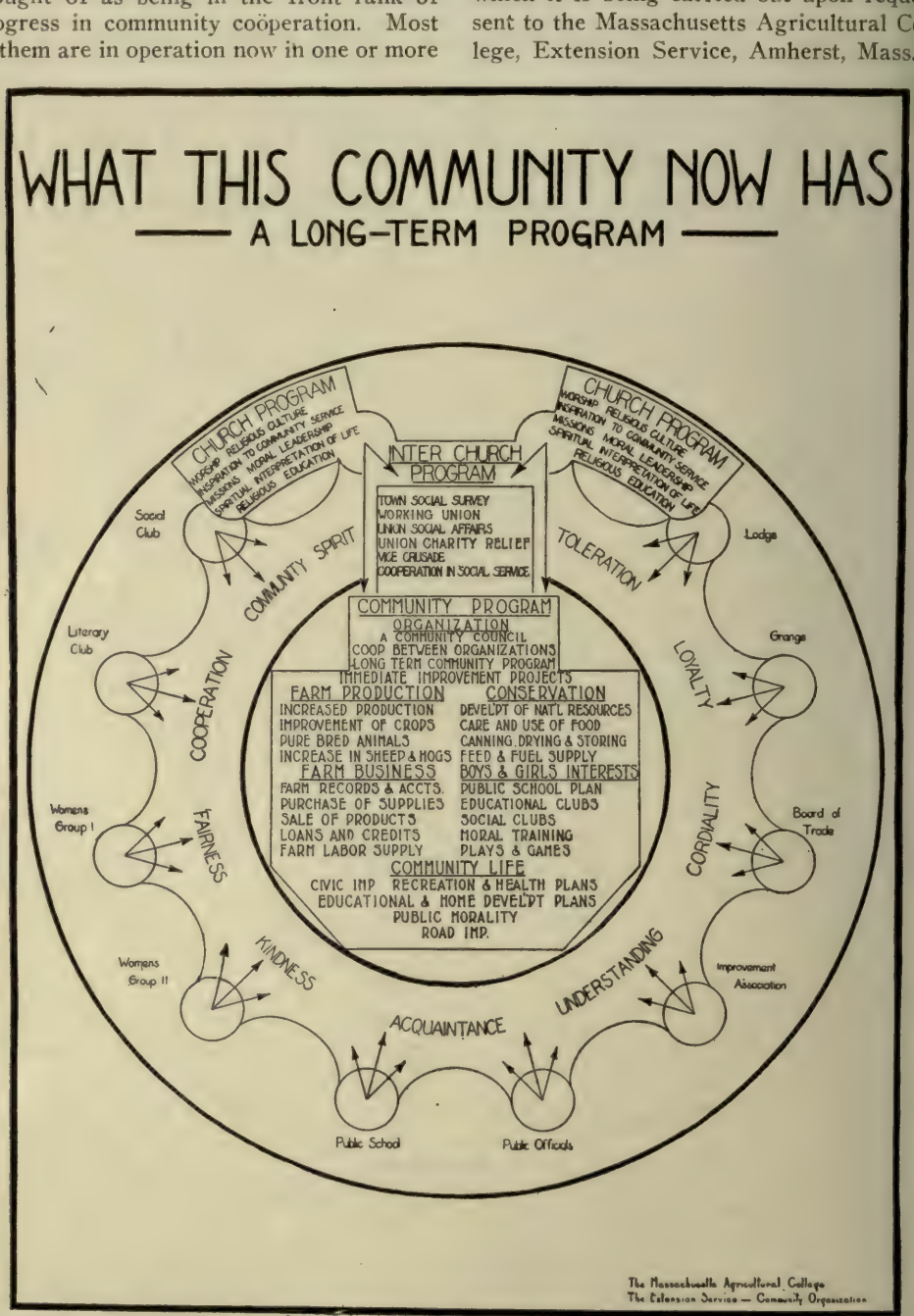
11. "When the town got the work-together idea it brought about a union of two churches (Congregational and Universalist) under one minister." (Write pastor of the Federated Church of Hardwick, Mass., for plan.)



A TRUE PICTURE OF THE GENERAL TENDENCY AMONG LOCAL ORGANIZATIONS TO PUT THEIR OWN SELFISH INTERESTS FIRST, AND THE LACK OF PLANNING FOR THE FUTURE ON THE PART OF THE AVERAGE TOWN

Some Things That Are Being Tried Out by Communities

The activities listed on page 461 may be thought of as being in the front rank of progress in community coöperation. Most of them are in operation now in one or more communities. Anyone interested in studying a particular enterprise that has been inaugurated may get the name of the town in which it is being carried out upon request sent to the Massachusetts Agricultural College, Extension Service, Amherst, Mass.



THIS CHART SHOWS THE GOAL TOWARD WHICH A COMMUNITY SHOULD STRIVE—A DEFINITE WORKING PROGRAM, WITH ALL GROUPS BOUND TOGETHER FOR THE COMMON GOOD

MANUFACTURING AND PROCESSING

Community laundry
Community bakery
Community slaughter house
Community repair shop
Community canning and preserving centers
Community electric cleaners

PUBLIC HEALTH

Community hospital
Community nurse
Community first-aid invalids' equipment
Isolation house for contagious diseases, etc.

RECREATION AND CIVIC AFFAIRS

Community house and civic center
Community recreation days
Community use of vacant land for recreation
Community public forum
Community recreation center
Community plan for landscape development

PRODUCTION AND DISTRIBUTION OF FOOD

Community stores
Community sales day
Community storage house
Community ownership of farm machinery
Development of a town forest
Community pig pen
Community breeding of poultry, cattle, horses and hogs
Community production of special crops such as beans, potatoes, onions, tobacco, etc.
Community crop price insurance
Community purchase of seed and fertilizer
Group purchase of farm products, i. e., members of a lodge, labor union or other society buying together in quantity

How to Organize Your Community

It is impossible to set up any one particular way of organizing a community and expect it to work in every detail in all parts of the country. The following plan, however, is the result of several years' trial in some Massachusetts townships. Altho this plan will always need to be adapted to local conditions, the principles are the same for all towns. The steps usually taken are:

1. *Conference of a Few.*—Some local leader should call together one representative from each local organization or group and a few at large to consider: (a) the possibilities of, and benefits to be derived from, a general get-together for definite planning of the future of the community; (b) whether the town cares to put in the necessary time, money and brains to produce results or whether it prefers to "let well enough alone" and let the future take care of itself. At this time, also, it is best to have someone present from the Farm Bureau or the Agricultural College to tell of the success of other towns and make clear the necessary steps.

2. *Organization Representatives.*—These representatives should report to their respective organizations, each of which should appoint one permanent representative to become a part of the joint committee or council of organizations. Three or more members at large should also be chosen. This council is not another organization; it is merely the coördination of all local interests for united action.

3. *The First Work of the Community Council.*—There are three specific things which a community council should do at first:

a. Bring about a thoro understanding among the various local organizations as to just what each is doing.

b. Take up any specific items of community interest which should receive immediate attention.

c. Call in representatives of county organizations and ascertain what work they are prepared to coöperate in for your town. These should include:

District Officer of the State Department of Health
The Farm Bureau or Improvement League
Society for the Prevention of Cruelty to Children
County Young Men's Christian Association
County Nurse Association
The Boy Scouts and others

4. *The First Community Meeting.*—After the items mentioned in 3 have been achieved, the council should call a meeting of the entire community to consider the questions mentioned under 1, and these only. A chairman and a secretary should be elected. All mention of specific items of improvement should be avoided at this time, as it may often reopen old issues and arouse antagonism just at the time when the greatest harmony is needed. It will be found worth while to have someone present from a town that has made a success of community organization. The whole matter should be thoroly discussed from all possible angles, and a vote taken to determine whether the people really desire to go ahead.

5. *Committees.*—If action is favorable, a few committees should be appointed. It is better to have a few general committees with sub-committees. The following have been found sufficient for all practical purposes:

a. *Farm Production*—soil, crops, animals
b. *Farm Business*—farm supplies, sale of products, credit, farm records and accounts, surveys
c. *Conservation*—purchase and use of food, canning, drying and storing, fuel supply, natural resources, points of scenic and historical value
d. *Boys' and Girls' Interests*—schools, educational clubs, social clubs, moral training, plays and games
e. *Community Life*—the home, education, health, transportation, recreation, civic improvement, public morality

These committees should be asked to do three things: (a) study the town thoroly along their respective lines; (b) call in whatever help can be secured from state and county organizations, boards and institutions; (c) work out two or three practical projects for improvement to be submitted to the second mass meeting. These projects should be based upon actual needs.

6. *The Second Community Meeting.*—This should be merely an unofficial town meeting. The chairman of the first town meeting should preside. The committee chairmen should report their projects, which should be taken up separately and put to a vote. While there will be nothing official or binding in this vote, still it will give sufficient attention to each project to prevent the passing of worthless ones. Here again everyone should have his say, since it is better for opposition to appear now than later. Do not forget that a community will go no further nor faster than the majority of the people both see and believe.

7. *The Community Plan or Program.*—Such projects as are adopted become the community's working program. This program should comprise some projects which can be carried out at once and others which will require a period of years. The projects adopted are turned over to the community council, which acts as their custodian and directs their carrying out.

8. *Getting Results.*—The local organizations carry out the specific projects. As their representatives come together in the council, they either choose or by general consent are asked to become responsible for definite things. If there are projects which no existing organization can carry on, such as coöperative buying and selling, it may be necessary to organize a new group to do this work.

9. *Council Meetings.*—The council should meet regularly every three months with special meetings as necessity requires.

10. *The Annual Community Meeting.*—Instead of one of the quarterly meetings of the council, there should be a meeting of the entire community. This should take the form of an annual meeting. Three things should be done:

a. Reports should be made of work done by any organization or group during the past year
b. The council committees should report the working plans for the coming year
c. The chairman, secretary and committees for the ensuing year should be chosen

In addition to these matters of business there is usually a speaker from the outside to discuss some question of special interest to the community at that particular time. Special community meetings should also be called as often as there are vital questions to be considered by the community.

What May Be Gained Thru Community Organization

Community organization is the best possible working plan for the development of the community. Community organization means to the community what scientific management means to business. The community improves by methods similar to those of a careful business manager—long-term planning, constant watchfulness, striving toward perfection in all departments, and a thoro coördination of them all. The community is connected with the sources of continuous help—The Farm Bureau, Agricultural College, State Board of Agriculture, State Department of Health, State Board of Education, County Y. M. C. A., and many others. Mistakes are avoided because communities now have the advantage of using a tried method that is working successfully in many towns. Community organization causes self-interest to give place to community interest, and fosters the development of community spirit, pride and purpose. When a community thru organization has succeeded in enlisting the enthusiastic coöperative efforts of its citizens in wise planning and efficient accomplishment, then and not till then will the welfare and progress of that community be assured.

Editorial Note.—The foregoing article is based upon a pamphlet entitled "Mobilizing the Rural Community," issued by the Massachusetts Agricultural College, Extension Service, Amherst, Mass.

A Reconstruction Program for City Managers*

By Richard S. Childs

PROBLEMS of the reconstruction period following the close of the war will find us as unprepared for peace as we were for war eighteen months ago. The impression of well-informed men in Washington who have looked forward to these problems, is that business will be good from the business man's point of view, but full of turmoil from the point of view of the laboring man.

Business men will suddenly find labor waiting for jobs at the mill gates in the morning, a War Industries Board which has suddenly lost its power to restrict production, a retail market of which empty shelves are a leading characteristic, a lively stock market, and war prices lingering despite decreasing costs, with resultant profiteering.

But labor will find itself in a hectic scramble for jobs and a sudden turmoil of migration. Several million men with their families, congregated now in congested war-manufacturing centers, will hear that Washington has wired, "Stop production," and that they are out of jobs—and no other jobs in town! That means—"Pack up and move!" Where? Fortunately the Federal Employment Service will be in the field to help give correct direction to these currents of job-hungry men. But nevertheless there will be for many men months of restless, unhappy roving before they are settled again.

The Coming Crisis

Into this confusion will come pouring more than a million soldiers discharged from cantonments, and then, more gradually, over a period of perhaps nine months, the return of 2,000,000 singing, victorious boys from France, who will have no idea where to find work when they hang up their uniforms and don the garb of civilians.

It will be an unemployment crisis such as we have never known. It will take time for these idle hordes to find that in your town there are no jobs left and they must move on. It will take weary months before factories have changed their machinery to peace-tune manufacture and captured the orders on which to work. It will take time to finance the job of converting swords into plowshares, and while the tools of industry are being converted, labor must take up the slack at its own expense. Even if there should be a new peace job for every war job, the process of transition would be one of long agony for the rank and file of our population.

The City's Task

In this situation, what is the task of the progressive municipality that is alive to the swift changes in the problems and conditions of its people?

The only cure for unemployment is employment.

And there are times in human history when there is not enough work to go around and the only remedy is to *make* work. Thus a farmer with a group of farm hands employs a rainy day in getting the stable floor repaired or painting his farm machinery. The cobbler at his bench, finding himself momentarily out of work for his customers, straightens up the shop, washes the windows and sharpens his tools.

So the nation that finds itself partially idle, must turn to sharpening the tools of industry and making those endless investments of labor which yield economies and increased efficiency to-morrow. This will be the time for the National Government to straighten railroads and lower the grades. Its plans are already in shape for embarking at this time on the creation of the great federal highway system which was held up by the war. It should, and undoubtedly will, push public works of every nature.

But the public works of our people are mostly local and municipal, not national public works. That means, then, that the cities must jump promptly into a maximum program of local public works, renewing worn paving, building long-deferred bridges, starting the new city hall, expanding the parks, regardless of the fact that a little money could probably be saved by waiting a year or two for lower prices.

* From a paper read at the convention of the City Managers' Association, held in Roanoke, Va., November 7, 1918.

Announcing the Plan

Here is what I should want to do if I were City Manager.

Get the Commission to announce that:

"Our Town intends to see every bona-fide resident safely thru the crisis. No soldier returning from war shall be told that society has no use for him or that he must now go tramping from employer to employer vainly trying to sell his services. Neither must those who stayed home be displaced to make room for the soldier, since that merely doubles the amount of necessary adjustment without touching the problem.

"Therefore Our Town will concentrate in this year the public work that ordinarily would be spread over last year and this year and next year and the year after, improving and beautifying and setting in order our municipal household in every sound and ultimately profitable way. What little extra it may cost to float a bond issue and buy materials now will be offset by the prevention of enlarged expenditures on crime, disorder, hospitals and police which are the inevitable accompaniments of hard times and industrial chaos.

"We will push these public works to whatever point may be necessary to absorb the excess supply of local labor."

Carrying Out the Program

Every week the City Manager, keeping in touch with the principal employers, will have on his desk a tabulation showing the number of workmen on all the payrolls of the city. When men are to be laid off, he will consider himself responsible for doing everything the municipality can do to find use for those men.

He will organize the effort to make the people of the city see their responsibili and to get them to choose that time to r pair their roofs, paint their houses, bu homes, install new furnaces and clear the garrets of broken chairs and wobbly trun which idle mechanics can convert into s able and useful second-hand goods.

He will plow the vacant lots and secu the use of idle suburban acres for garde

Thru all his activities will run the prin ple that the man who wants to work mu have his chance; that to supply employme for *every* industrious worker is a du which society can no longer ignore, a that employment thus supplied must be self-respecting, living wages and not bread-line pittance that makes a cringi beggar or, worse, a dangerous Bolshevi out of the recipient!

It was the reproach of England after t Napoleonic wars that for twenty years h streets were full of her maimed veteran helplessly begging on the corners. A futu and more enlightened generation will r proach us if we welcome our men fro France with speeches and parades and the leave them to tramp the sidewalks fro door to door in a frantic, sordid scramb wherein a thousand men jostle for five hu dred jobs!

May it be a city-manager town that w first hang out on Main Street a banner th says to the returned soldiers, "We hav good jobs waiting for every one of you Our Town takes care of its own!"

The Value of a Reconstruction Program

To the Editor of The American City:

Your article on Reconstruction in the November issue of The American City, which I have read with great interest, impresses me as being more than an editorial —it embodies the carefully thought-out "first principles" which should form the basis of future reconstruction efforts.

Altho there has been much talk upon the subject, little attempt has been made to size up the problem and to formulate guiding principles of action. The suggestions as to organization methods are of particular interest, as the need for such *local* organization is far from being generally appreciated. As you point out, the forward-looking civic and commercial bodies many cases have amply demonstrated the fitness for such undertakings.

But it is your "Program of Progres which has particularly held my interes The fifteen factors go to the root of th problem, and the equation of "steps towar the goal" is appropriate as well as convin ing. The editorial, I think, should exert a influence of great value in aiding the ave age American citizen to appreciate the im portance as well as the character of th problems with which our municipalities wi be faced immediately upon the terminatio of the war.

DORSEY W. HYDE.

Librarian, Municipal Reference Library, New York City.

The Nation-Wide Campaign to Find Available Employment Worthy of the Returning Soldiers, Sailors and Marines

ALL governmental and private agencies which have been active in the prosecution of the war, and particularly those which have had to do with the welfare work for men in uniform, have been called upon by the Federal Employment service to assist in the great task of finding, first, suitable employment for the fighting men of the nation as they are demobilized, and second, suitable employment for those who, as their contribution, left their regular employment to engage in emergency war work in shipyards, munition factories, etc.

This step was taken by the officials of the Federal Employment Service immediately upon receipt of the news that their program had been adopted by the Secretaries of the War, Navy, Interior, Commerce and Agriculture Departments.

The appeal for the assistance of these service agencies was made by Nathan A. Smyth, Assistant Director General of the Federal Employment Service, at a conference of directors of the service for the states east of the Mississippi, which was held in Washington, December 1. At the meeting were also representatives of the Red Cross, Y. M. C. A., Knights of Columbus, Jewish Welfare Board, national church organizations and civic bodies, all of whom pledged their prompt and enthusiastic support of the plan.

At the same time the Council of National Defense, thru Grosvenor B. Clarkson, Director of the Council's Field Division, telegraphed the state councils that the entire field organization of that body was behind the plan and asked that its 184,000 local units work with the agencies of the Employment Service.

It is the intention of the Federal Employment Service to establish in every community of any size, a Community Bureau thru which the returning soldiers, sailors and marines may be put in touch with the local opportunities for employment. These bureaus will be jointly managed by the organizations which participate, and in them will be kept the record of openings found by the agents of the various organizations.

The necessity for rushing the opening of the bureaus is emphasized by the fact that demobilization is already under way. The state directors of the Employment Service have been instructed to make certain that representatives of labor are on all management committees and that the county farm agents of the Department of Agriculture and the states are connected with the bureaus "so that they may furnish bureaus with all available information as to positions upon farms and that national effort to get men back to the farms may be emphasized."

To permit the interchange of information between cities and states, an interstate clearance system will be conducted thru the Federal Employment offices. While the purpose of these Community Bureaus, which will be supported by community contributions, is primarily to care for the reemployment of the rank and file of the army, they will also serve as clearing-houses for professional men in the army,—engineers, teachers, etc.,—and, in addition, will devote a part of their energies to the reemployment of persons who have been employed on war contracts. A special section on vocational guidance will also be in a position to serve young men between 16 and 19 years of age.

The community labor boards of the Federal Employment Service will work jointly in the larger towns and cities with the local councils of defense. In the smaller towns and rural districts where there are no community labor boards, the local units of the Council of Defense system will be used.

In the larger communities, the managers of the soldiers' bureaus will in most instances be regular officers of the Employment Service. Where they are not, the managers will be made officers of the Government's employment agency at $1 a year, and arrangements for salary will be made locally by the management committees. The managers will be in constant attendance at the bureaus, where all information as to positions open will be centralized for use

by all local agencies and in which all organizations interested may have representatives working with common forms and methods and using joint resources.

Many men in the Army are better men and are capable of better work than they were before the war, so that to make their old jobs available will not suffice in a great many cases. They not only do not want their old jobs back, but it would be a misfortune to the country to permit them to go back to those jobs, even if they did. Each man must have individual attention, and the opportunity to engage in the best job of which he is capable. Our debt to the men who fought, to those who labored behind the lines and to the men and women who served so faithfully in munition plants, demands no less.

This appeal for community coöperation in solving one of the most pressing problems of readjustment is meeting with a prompt response. In New York, for example, on December 3, at the call of Henry Bruère, Federal Employment Service Director for New York, local representatives of the War Camp Community Service, Knights of Columbus, Jewish Welfare Board, National Catholic War Counci National Security League, Y. M. C. A National League for Women's Service, an the Board of Education, met to give the hearty endorsement to the plan, and t pledge the coöperation of their near-b huts, soldiers' hotels, service clubs, etc., i carrying it out. They proceeded at onc to organize as the United Council for Re employment. Other organizations will b asked to participate until all are repre sented. Because so many of these organ zations have the national headquarters i New York, this enthusiastic response o their New York agencies, many of whic are housed or operated from the same build ings as their national bodies, will un doubtedly have an influence in securing th prompt and enthusiastic support of the pla on a national scale.

There is great need for enlisting th hearty coöperation of municipal officia and chambers of commerce in the plan an for developing public works long neede and deferred. Present indications point t a growing recognition of this need, so w may reasonably look for some assistanc from this quarter in meeting the problem.

Definite Steps in American Reconstruction

At the Rochester Conference on American Reconstruction Problems, called by the National Municipal League, and held November 20-22, the following were among the resolutions adopted:

Resolved, That this conference favors the immediate appointment, by the National Municipal League, of a National Committee on Local Problems of Reconstruction;

That the informal committee of forty which has coöperated with the League in calling the present conference be made the nucleus of the proposed national committee, and that there be added to the committee such other men and women interested in civic progress and social welfare as the Council or Executive Committee of the League may authorize;

That the principal objects of said committee shall be to promote the organization of local committees on reconstruction, and to stimulate individuals, organizations and national, state and local governments in giving adequate attention to reconstruction problems in the interest of local communities;

That the Council or Executive Committee of the League be urged to provide sufficient funds to enable the committee to do effective work, including the employment by the committee of an efficient secretary who shall devote all h time to reconstruction problems.

Whereas, there are indications that the ex cellent war-time control of vice in civil com munities will be relaxed if organized publ opinion is not promptly brought to bear i favor of strict law enforcement by all loc authorities, and

Whereas, the demobilization of men in th army camps creates an immediate emergenc for their protection against commercialize vice, be it

Resolved that the secretary of the Leagu be authorized to send letters to the heads o civic organizations thruout the country urgi them to give immediate attention to this prob lem; and that he be authorized to have tran mitted to the mayors of all cities with ov 10,000 population the following telegram:

"National Municipal League conference o reconstruction problems considers demobiliz tion hundreds thousands soldiers weekly in portant emergency for local executives. Ear reports indicate dangerous relaxation vice co trol maintained during war. Imperative ci give immediate attention to reception and pr tection men demobilized. Public health d mands soldiers return home uncontaminate by venereal diseases."

The Community House—An Element in Reconstruction*

How Chambers of Commerce Can Promote Sane Progress and Honor Their Townsmen Who Have Served in the Great War, by Raising Funds for "Liberty Buildings" as Soldiers' Memorials

By Samuel Wilson
Manager, Chamber of Commerce, Kansas City, Kansas

THE drift of world thought is toward democracy. In fact, in many countries it has gone far beyond this and ren outreached socialism. In Russia there is been a demonstration of the results of rning the social structure bottom-side-up. hose who give attention to this are armed by the uncertainty of the future as gards political and social conditions. Wholesale substitution of lower-class rule es not bring a millennium for the worker. he new order requires leadership, and it unfortunate that the lower social stratum fords no trained leaders. The immediate sult is anarchy.

The Opportunity for Leadership

For perhaps ten years, the drift of thought the Chamber of Commerce world has en toward democracy in organization. he modern Chamber of Commerce in the edium-sized city is quite as much an institution of civics as of commerce. In this e have a tremendous advantage over the uropean countries in so far as we already ve a considerable group of trained leaders ho represent all classes of society—barng perhaps the lowest. When the Chamr of Commerce of the medium-sized city came active in matters of public welfare d surrendered its smaller trade restricve work, it was preparing in a way for the y which has now come upon us. Yet we ve made but a very small start. We are ill looked upon as organizations of busiss and professional men. The history of r work in connection with labor disturbces has not always been of a kind which e are inclined to advertise. Happily the y has passed when a Chamber of Comerce will let itself be trapped into defending an employer solely because he is an employer. However, we are a long way from truly representing our whole cities; in many instances we must live down a reputation for selfishness and must bend every effort to regain the confidence of the worker.

If we look ahead to the coming days of adjustment with some measure of fear, let us not forget that along with the grave problems of reconstruction will come wonderful opportunities for advancement. Every community will be faced with the problems; the broadly organized community alone will enjoy the fruits of the opportunities. While the idea of the community center has not been very sharply defined, and there has not been sufficient experience from which to predict its final form, nevertheless it promises to be the vehicle for the realization of the broader hopes of community organization. While nothing has yet occurred which would warrant the prediction that the Chamber of Commerce in the medium-sized city would sooner or later evolve into a community center, yet the tendency is distinctly in that direction.

The Community House the Home of Common Interests

The Community House becomes at once the focal point of the community center. In defining the community center movement, Dr. Henry E. Jackson, Special Agent in Community Organization of the United States Bureau of Education, quotes President Wilson and adds brief comment. To quote Dr. Jackson:

"President Wilson says that our present need is 'to arouse and inform the people so that each individual may be able to play his part intelligently in our great struggle for democracy and justice.' This is a proven statement of the aim of our movement. With

* From a paper read before the annual convention the National Association of Commercial Organizan Secretaries, at Rochester, November 19, 1918.

the addition of one word it would become a complete description of it. That one word is 'organize.'"

Taking Dr. Jackson's statement of the case, it would seem that the commercial organization secretary becomes a necessary factor at the point where the need of organization is encountered. Our Chambers of Commerce have endeavored to typify public organization. The secretary is experienced and skilled in the technique of organization. Unfortunately the limitations of the Chamber of Commerce in membership, and in the classes which are represented within the membership, have frequently prevented its truly representing the community in the broader problems. For this reason I doubt whether the Community House of the future can be the enlarged headquarters of the Chamber of Commerce and nothing more. Rather, it should be a physical plant which, as well as housing the Chamber of Commerce, furnishes offices to women's organizations, shelters the Farm Bureau and other governmental extension agencies, to say nothing of being the home of Labor itself.

Such a plant, being the headquarters of all factions and classes, would automatically become the common meeting-ground and furnish a multitude of points of contact.

The Community House, as a common center and meeting-place for the community movement, multiplies and increases the points of contact between the various classes which go to make up the community. Again, thru the organization of the community center the whole people may give voice to their opinions. Instead of having an expression from a single class, the organized community in the new sense of the community center may reach conclusions which are the true "least common divisor" of public opinion.

For Cities of All Sizes

The applicability of the Community House idea to cities both large and small is obvious. In the small city, one Community House will serve the entire municipality and centralize all effort on all public undertakings. In the large city, perhaps a half-dozen such " homes" will be required, each serving the people of a limited district.

The building of Community Houses seems to have had its inception in smaller cities, one of the first instances being th cf Washington, Pa. In this case the Co munity House served as headquarters f the Chamber of Commerce and offered f cilities for the accommodation of farme and their families while on shopping tri to town. In addition, it furnished a co mon meeting-place for the people of t town. This Community House had as primary purpose the bringing together the people of town and country and t development of a coöperative spirit. B whether the Community House is design as an attraction for the farmers of the su rounding territory, or whether it is intend as a meeting-place for the people of small district within a large city, its bro general purpose is the same,—"to ser those interests which all have in common

In the case of the small city, when t Chamber of Commerce builds a Communi House it accomplishes the double purpose securing headquarters for the communi center, and at the same time makes of t Chamber of Commerce a permanent inst tution. The Chamber of Commerce wit out property is only a volunteer associatio those interests which all have in common interests: the Chamber of Commerce whic owns adequate and comfortable hea quarters is a permanent institution with a the strength of a corporate body.

Financing the Undertaking

In reducing the Community House pr ject to a practical undertaking, one of th first problems encountered would be that c financing it. Since there is no fund of ex perience in this particular line, it would b necessary to be guided by experience i financing other public buildings and publi organizations.

It may be safely said that any endowe public organization is in danger of becom ing unresponsive to public opinion becaus it is independent of the public's continue support. The public organization whic must go back to the people at regular inter vals is the one which will serve them bes

A community home for a particular dis trict might be financed in much the sam way as a Y. M. C. A. This would provid the building free from debt, or practicall so, but would necessitate annual contribu tions or subscriptions from some source It is a safe presumption that such a pro

ect would be best supported by a very small umber of very large subscribers, and a ery large number of very small subcribers. Perhaps this would not make for ure democracy in the organization, but by eeping the control in the hands of a minorty the effectiveness of the whole organizaion might be greatly increased so far as ropaganda work is concerned. The hisory of our government affords ample justiication for such minority control up to the ime when a well-established policy beomes generally known and accepted. Such vas the history of our Colonial and early Jnion days. Against this, during our presnt war, such projects as food and fuel onservation have been accomplished almost entirely thru the action of a thinking majority. Thus, an organization which is rst directed by a minority, may soon attain broad democracy.

The Community House in Industrial Welfare Work

In measuring the value of the Community House as a factor in reconstruction in the arger cities, we might take a single illusration of the purposes which such a house ould serve. In the very large city, the eld of operation of any one house would ecessarily be confined to one particular istrict. Let us suppose that it is located mong the homes of industrial workers. s patronage and use would be restricted the men whose only club has been the rner saloon, and to the women whose cial contact has been limited to gossiping ross the back fence. It would be a sort f poor man's club where he and his family ere offered clean, healthy recreation and ere schooled in the social and political roblems of democracy. It might house ght schools in Americanism. If it were rected by competent men and women, it ould become the common meeting-place f all the welfare workers of the industrial ants in its neighborhood.

The fact that welfare work in the indidual factories has encountered so many stacles, strengthens the hope that coerative welfare work, such as might be ovided at the Community House, would free from the paternalism of the individual employer's efforts, and would meet ith much greater success. As things now and, the industrial plant which makes an fort in organized welfare work more often than not suffers equally with neighboring plants in any labor disturbances which occur. It is an unfortunate fact that the progressive plant is penalized for the unprogressiveness of its neighbor. The stability of the labor situation in any locality is merely the average of the worst plants with the best.

Coöperative welfare work thru the agency of the Community House in the industrial district, is only a parallel to the work of the War Camp Community Service, the Y. M. C. A. and the K. of C. in the army. These organizations have had a wonderful influence in maintaining the morale of our soldiers. The problem of the industrial manager is that of maintaining the morale of his employes.

Industrial managers of America must find some middle ground between Prussianism in the handling of labor, and Bolshevism in being handled by it. The world is on fire with a new idea of liberty. Whether the excesses of extremists shall lead to reactionism, or whether it shall be a normal upward development, depends in great measure on "informing the people so that each individual may be able to play his part intelligently in our great struggle for democracy and justice." The Community House and the Community Center offer that bigger and broader agency thru which the common people may be informed. The Community House may be the means of developing the Chamber of Commerce into a Chamber of the People.

A School of Democracy

Let us consider the possible usefulness of the Community House in meeting another problem, which, like that of labor, is not new but is likely to be encountered in a more aggravated form during the coming days of adjustment to new conditions, viz., the need of a common school in democracy.

In the days which have passed, the Chamber of Commerce has been the only popular institution which consistently directed public attention to broad political problems. Thru its agency business and professional men have been gathered together to listen to national leaders who had a message calculated to better the political structure. Thru committees and otherwise, attention and study has been given to problems affecting the nation; and thru the efforts of the Chamber of Commerce of the United States

these collective opinions have been brought to the attention of our executive and legislative officers. But the great majority of the populations of our cities have thought little and cared less about the problems of state.

If it is true that the strength of democracy lies in an intelligent citizenship, this condition is dangerous. The circle of those who think on public problems must be greatly expanded. Law and the action of courts must be supported by thinking majorities. If this is to be, we must have a new school of democracy, wider in scope and purpose than the present Chamber of Commerce.

Fortunately, service of country in all sorts and capacities from wearing the khaki to selling Liberty Bonds, has prepared the public mind for this broader undertaking, in a way and to a degree which would not have been attained in twenty-five years of normal evolution. The soil is ready; we need only sow the seed and tend the crop. Even our non-English-speaking populations have been reached with the message; Americanism has come to mean something, not relative, but positive. There are only two classes of citizens—those who are Americans and those who should be interned.

The Civic Force of Public Problems

If this new Americanism is to be developed, if the concept of the community center as a school of democracy is to be realized, we must have big problems on which to work. The Liberty Loan and War Work Funds were ideal undertakings, because the very bigness of them gripped the public imagination and held in close union tremendous bodies of workers heretofore unknown to each other and wholly unaccustomed to coöperation. Unless there are other equally large problems yet to be solved, then we shall find difficulty in keeping the broadened Chamber of Commerce or Community Center functioning.

As an illustration of the possibilities, may it not be, that the community organizations of to-morrow could be used in the promotion of a popular bond issue which would build a great system of permanent highways under federal control, so that our domestic commerce would be rapidly increased as an economic forerunner of t needed expansion of foreign commerce utilize our newly constructed merchant m rine? Or, may not these organizations s cure public support and popular subscri tions for municipal bond issues for t building of cities in keeping with the ne day? May we not thru these, and in th way, continue 22,000,000 people as stoc holders in their government? Or, may n these community centers be the means realizing a new brotherhood of man?

The Value of Uniting the Community in Service

Only a few years ago much time w spent in state and national meetings of se retaries in discussing the advisability using non-members on committees. Wi the great problems of organization whi were brought to us by the war, we so discovered the complete futility of attemp ing to do the work of the community th the agency of a limited class. The organ zation of the bond and loan drives ma necessary the mobilization of hundreds men and women who previously knew t Chamber of Commerce only as a nam Thru service, these people have learned t technique of organization and the effe tiveness of coöperative effort. The butch in the packing-plant has learned that and the banker have some common inte ests. Is the Chamber of Commerce of t future going to so limit its field of acti as to destroy this new-found acquaintan and comradeship between widely divid classes? If it is not, the time has co when we must so modify our organizatio as to make the broader appeal and warra us in the claim that the voice of our o ganization speaks for the whole communi

The suggestion has been made that should construct "Liberty Buildings" memorials to our soldiers, rather than spe the money for monuments of no usefuln and of questionable artistic merit. Wh could be better than such a memorial those "who have made the world safe f democracy"? In the symbolism of name there would be an appeal to t finest idealism of the community, while t building itself would afford the physic plant for the solution of the problems of t "days of adjustment to new conditions."

Liberty Buildings as Victory Monuments

Suggestions to Communities Planning Memorials to Heroes of the Great War

THE custom of commemorating the dead is older than history. Special honor has always been paid to the *roic* dead—those who have rendered eat service or made great sacrifice for general welfare. Every village has its rchyard filled with costly marble; every has its statues, monuments, or other morials.

Form of the Memorial

More than any other war of history, this has been fought for a principle—for erty and the safety of democracy. Prinles may be depicted in stone or pictured canvas, but such representations, howr beautiful or symbolical, will not have . A principle can live only in the lives men, and if it is our purpose to perpete the cause for which the great war was ght, we must constantly reiterate and ch the principles of liberty and democy to each succeeding generation.

This suggests that a memorial worthy of recent conflict be dynamic; it must be a ilding that shall honor the dead by imrtalizing the principles for which they de the supreme sacrifice; it must be a ilding commemorating the service of the ing by giving service, rather than a tue or a shaft in which there could not lse the life blood of a new day.

Name of the Memorial

Liberty more than any other word exesses the principle for which the war has en fought, and which is to be perpetuated the proposed memorial. Therefore the me *Liberty* should distinguish the build-; Liberty Hall, Liberty Building, Liby House, Liberty Lyceum, or some other ch name would be appropriate.

Object of the Building

The building would serve two main rposes:

(1) As a memorial to the heroic dead, d to all from the local community who ned the colors during the war;

(2) As a community center to afford adquarters and a meeting-place for such community agencies as the

Chamber of Commerce
Red Cross
War Veterans' Associations
Patriotic and Defense Societies
Local Charities
Playground and Recreation Associations
Fraternal Organizations
Farm Bureau
County Grange
Rotary Club
Civic Organizations
Women's Clubs
Boy Scouts
Boys' and Girls' Clubs
Literary Societies
Musical Societies
Study Clubs

The Building Site

The building should be centrally located and easy of access by all means of transportation. The site should, if possible, be large enough to separate the building on all sides for at least fifty feet from other structures, and free from unusual noises. More open space would be desirable, and in some cases provision could be made for community tennis courts or other outdoor recreational features immediately adjoining the building. The site should be chosen with reference to the future, so that the growth of the city will not remove the center of population too far away. The nature of the enterprise is such that a municipality might well donate the site or permit its erection upon ground where private buildings would not be permitted. In very large cities several neighborhood buildings would be preferable to one central structure.

Design

The building should be architecturally beautiful, featuring the best building material of the particular locality, the style to be impressive but not over-ornate. The size and cost of the building, the equipment which it will contain and the service which it will perform will depend upon local needs and local spirit. In every community some of the following facilities and equipment should be embraced in the plan:

Offices and committee rooms for the Chamber of Commerce and other local organizations
Headquarters for Farm Bureau

Auditorium for public meetings, entertainments and motion pictures
Memorial hall with engrossed records under glass, and tablets and trophies
Reading room (or complete library if the town has no public library building)
Exhibit rooms for art exhibits and for products of local industries and resources
Farmers' rest room
Classrooms
Community kitchen
Dining-room
Music room
Dance hall
Gymnasium
Swimming pool
Bowling-alleys
Room for billiards and pool
Game rooms and club rooms for boys and girls

In small towns and villages where there is no adequate town hall, it may prove desirable that the building should include headquarters for the local government, and perhaps in some cases, for the local fire department. A combination of public school building and social center will be desirable in some of the smaller places.

Use of the Building

The building should be open to the whole community. It should be dedicated to community fellowship and unity, so greatly advanced by this war. Every non-sectarian and non-partisan movement to promote community progress, welfare and happiness should find sanctuary within its doors.

The meetings of the various organizations mentioned above, lyceum courses, night schools, motion picture entertainments, dances, musicales, debates, etc., should keep the building constantly in use.

Cost of the Building

For the building alone it is recommended that a minimum sum equivalent to $3 per capita in towns of 10,000 and above be provided. An additional minimum sum of $1 per capita ought to be provided for furnishings and equipment. In small communities we believe that a minimum of $30,000 for the building and $7,500 for furnishings and equipment would be appropriate. Rapidly growing communities ought to take into consideration the probable increase in population for the next ten years and build accordingly.

Raising the Money

The entire cost of the building and equipment should be raised by popular subscr tion in a campaign conducted along t lines of a Red Cross or United War Wo drive. To exact the funds by taxati would rob the building of its true nature a thank-offering. In some cities a publ spirited citizen can be found who will d nate a suitable site for the building. T building should be erected without encu brances on either building or site. Liber Bonds should be accepted at par from who wish to make payments in that form

In some cases it will be possible to secu large gifts from relatives of men who ha given their lives in the war. Such a g could, if desired, be used to provide a gy nasium, or a library, or some other spec feature for which funds would not be othe wise available and which might bear t name of the donor.

Lodges or societies which are to ha rooms in the building might be invited provide the furnishing for such rooms their own expense.

Maintenance

The nature of this building and its us place it in the class of all other publ buildings and, naturally, should exempt from taxation of all kinds.

Three methods have been suggested f the financing and maintenance of t building:

(a) An annual municipal appropriation cover the cost of upkeep and of heat, light a janitor service; such appropriation to be ma in consideration of the free use of the buildi by the public generally and its dedication the welfare of the entire community.

(b) The building could be made self-su porting by charging adequate rental to orga zations occupying offices in the building and reasonable charge for the use of the aud torium and of the club facilities.

(c) An endowment fund to be raised popular subscription and to be supplement by bequests from time to time.

Title and Control

The placing of responsibility for the ful est possible use of the building in the i terest of the entire community should given the most careful consideration. Loc conditions will determine which of the fo lowing plans will be preferable:

(a) Where there is one dominant organiz tion, such as the Chamber of Commerce, whic has the confidence of the community, a can paign for funds might be conducted by suc

anization, which would retain title to the lding and be responsible for its administra-

b) The building could be dedicated to lic use under the trusteeship of a represen-ve Board of Trustees. Such Board might nprise from twelve to sixteen individuals, ending upon the size of the city and the l groups to be represented. The trustees ht be elected by popular vote of all citizens tributing $5 or more to the building fund. safer plan might be to have an agreement le in advance between the leading local or-izations coöperating in the campaign, that h would be entitled to elect annually a speci-number of members of the Board of stees. In that event it would be desirable ave the City Council choose representatives l in number to that of the largest organi-on, the representatives of the city to in-le the mayor and leading officials interested ublic welfare, recreation and education. nty officials might be similarly represented ome cases.

c) The title to the land and building might ransferred to the municipality, the manage-t of the structure and supervision of ac-ies to be under the direction of a Board Trustees chosen as suggested under "b."

or proper maintenance of the building, most desirable that there be a secretary harge who shall devote all of his time ommunity service. In most cases, this ht be the Chamber of Commerce secre-. In small communities which cannot ntain a Chamber of Commerce with l secretary, there might be formed a mmunity association to which men, nen and children would be eligible for nbership and which would employ a mmunity secretary who would take rge of the building and who would de-his or her time to the industrial, civic recreational needs of the entire com-nity.

Now is the Time for Action

While the sacrifices and achievements of war and the conditions of permanent ce are still the main topics of public dis-sion, is the time for action. The project uld be launched at once, therefore, and funds pledged by the time the peace ty is signed.

community meeting, called by the mber of Commerce, might well start movement. Following such meeting, a erty Building Committee of representa-men and women from all spheres of in-nce might be appointed and be made onsible for the campaign. Every com-nity now has its organization of war workers for Liberty Loan, Red Cross, United War Work and other campaigns. These organizations can, with practically no difficulty, secure funds necessary for this memorial.

The erection of these buildings will afford employment to a great number of returning soldiers and war workers, and will help in the process of industrial readjustment. The movement should be immediate also in order to preserve the splendid spirit of service that has been created in the various war activities. The spirit of unity, the subjugation of selfish interest, and the exaltation of spiritual values must be perpetuated in order to preserve the greatest fruits of the war.

The soldiers and the boys from our various communities have been enjoying in camp and in the near-by cities the facilities of the Y. M. C. A., K. of C., Red Cross, War Camp Community Service, and other agencies. They have been uplifted and ennobled by the wholesome influence thrown around them by a thoughtful government and a patriotic people. They must not return home to find sordidness and a lack of all the things that made their army life pleasant and memorable.

There should be a Liberty Building in every community by the time the last troops are demobilized.

The Campaign

As stated above, the funds to provide this building and its furnishings and equipment should be given as a thank-offering rather than exacted in the form of taxation. Not the least cause for thankfulness should be the fact that more than 97 per cent of the two million Americans who went overseas will return alive. This is a special reason why the war should be commemorated by *living* memorials.

To raise these funds the veterans of all the war-time campaigns should unite in one body and put into this final effort all the zeal and enthusiasm that is justified by the great victory our boys have won. The appeal can be made irresistible from a patriotic standpoint. It is also strong from a selfish standpoint, for the reason that the money can be spent at home with local contractors and dealers, for home labor, and to provide a structure for the enjoyment of home people and the home boys.

FORWARD STEPS
REPORTED TO THE AMERICAN CITY
BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

MAYORS

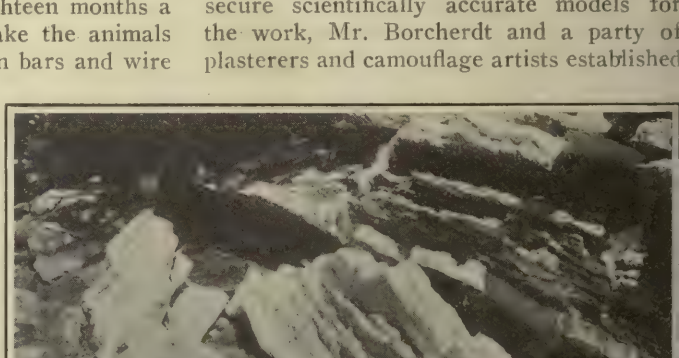
Moving a Mountain to the City for Denver's New Habitat Zoo

DENVER, COLO.—Altho zoölogical gardens have always ranked among the most popular of municipal park attractions, there has been less constructive thought given to this feature of civic improvement than to any other park attraction. When one considers that wild animal life has a peculiar interest to people from the days of childhood, that thousands flock daily to the animal cages during the summer season, and that the zoo is as much an educational feature as it is a means of entertainment, it seems incomprehensible that so little intensive development has taken place in this direction.

The city of Denver has had under construction for more than eighteen months a habitat zoo designed to make the animals feel and look at home. Iron bars and wire enclosures will eventually be eliminated from this zoo. The present work has involved only bear pits and a monkey house, but plans have been drawn and accepted for the treatment of the entire zoo along the same lines.

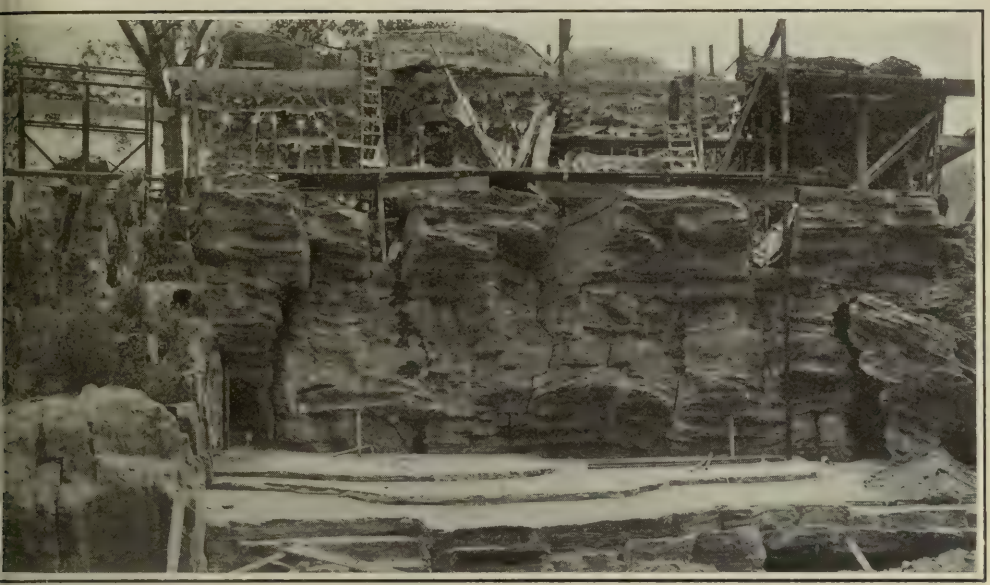
The Hagenbach gardens of Hamburg, Germany, have been built along somewhat the same lines as the Denver zoo, but with this difference: in Hamburg the rock modelling was done by hand, and no attempt was made to give to the rocks the natural shades, or to embellish the work with foliage; in Denver the models for the miniature mountain under construction were taken from cliffs in the Rocky Mountains, so that the actual strata of the rock, the identical colors and the surrounding vegetation have been preserved. Museums have for many years employed painted backgrounds and colored glass transparencies to give a realistic setting to mounted specimens of the animal kingdom, and it is at once apparent that when this idea is adapted to the zoo the educational advantages become infinitely superior.

The originator of Denver's habitat zoo is Victor Borcherdt, a taxidermist by profession, whose work in the Colorado Museum of Natural History has won praise from museum directors thruout the country. When Mr. Borcherdt was appointed superintendent of the zoo, he at once began to plan for the habitat zoo. In order to secure scientifically accurate models for the work, Mr. Borcherdt and a party of plasterers and camouflage artists established



HOW THE MODELING WAS DONE

Cement and hemp cover to left, plaster cast in center, and rock section copied, on right



ONE OF THE BEAR PITS NEARING COMPLETION IN THE NEW HABITAT ZOO, DENVER, COL.

a camp upon the top of Dinosaur Mountain, a hogback ridge in the Front Range of the Rocky Mountains, which many million years ago was an ocean reef.

Having packed provisions, water, hemp fibre, cement and glue on the backs of burros to the mountain, the scenery shifters made casts of rock formations on its summit. The process followed is described thus: The cliff section to be copied was bounded by a raised band of cement, within which was pressed a half-inch layer of clay; over this was laid a mixture of cement and hemp, which was removed when dry, together with the discarded clay coat; the cement coat was then replaced and the space between the rock and cover filled with a warm glue mixture; from this glue cast the plaster cast was fashioned. The result was a perfect reproduction of the rock surface, showing the strata to the most minute erosion. The casts were then hauled down the mountain on bob-sleds, placed in motor trucks and sent to the city.

The miniature mountain, 40 feet high and, as completed to date, 200 feet long, was built up on a structural steel framework, to which the concrete was tied by reinforcement. Before being poured into the casts and tamped, the concrete was stained with mineral pigments to impart the exact shades of the rock. Pockets in the concrete, filled with earth, were planted with pine and spruce trees, mountain underbrush and native wild flowers, and the area around and at the ends of the structure was planted with similar vegetation and embellished with rock outcrops.

The effect is so realistic that visitors examine the concrete with incredulity, doubting the attendant's statement that the rock is manufactured. It was especially interesting to note Mr. Borcherdt's methods. He built up the rock formations as a painter would turn out a landscape, changing the picture here and there as he proceeded with the work.

The original plans call for a mountain 332 feet long, intended to house monkeys, bears, lions, wolves and foxes. Only two bear pits and the monkey house have been built up to the present time. Beneath the mountain are located the bear dens, entrance to which is gained thru cave openings in the rock. Behind the sleeping dens runs a corridor which is used by attendants as a changing corridor and feeding room. The animals are prevented from mingling with the spectators by a moat, 18 feet wide, in front of the bear pits. On the spectator's side the wall rises 4 feet above the water. The depth, 8 feet, prevents the animals from securing footing. Water is also introduced above the first tier of cliffs, dropping to the floors of the dens in a succession of miniature waterfalls and insuring a constant sup-



DETAIL OF BEAR CAVE, SHOWING ATTENDANTS' CORRIDOR IN REAR

ply of running water for the animals.

One of the most unique features of the work is the monkey house. Under a great, overhanging cliff has been reproduced one of the Mesa Verde cliff-dwellings, complete even to the primitive ladders. Beneath the house is a boiler room, so that the animals can keep warm in winter. Zoo attendants had always met great difficulty in handling the primates, all of which sooner or later contracted tuberculosis. This was due to the fact that the animals were shut within a heated house after the first snow. Mr. Borcherdt revised the plan by allowing them to go out of doors in the coldest weather. The animals would return to the house whenever they became cold, huddling around the stove and holding out their hands to the warmth just as human beings do. With this change the death rate dropped to a normal basis.

The cost of the present work, approximately $40,000, was much greater than the original estimate because of the difficulty in securing labor, and the increased cost of steel and cement.

The plan calls for a habitat treatment of the entire zoo. The site of the old zoo is to be used for ponds for aquatic animals and is to be treated with rock ledges. Ruminants are to be located in sunken parklands.

City authorities feel assured that the habitat zoo will prove more than an interesting sight; it will attract classes of school children and become in time an educational institution of great value.

W. F. R. MILLS,
Mayor.

CITY MANAGERS

Striking Economies of Complete Motorization

Waltham, Mass.—Since the introduction of the commission-manager form of government in February of this year, Waltham has greatly increased the motor equipment of its departments. After eight months' experience with the new equipment, the heads of the various departments affected have submitted the following data to the manager:

Street Department

In the Street Department the equipment consists of one Kelly-Springfield 5-ton truck with exchangeable oiling tank and dump body (purchased last year), two Autocars with removable and dumping bodies, one Stearns-Knight extension body and two light machines for superintendence. The last five pieces were purchased in the early spring. In the collection of ashes during 1917, when horses were used entirely, the cost averaged $11.24 per week, which on present wages would be $128.81. During 1918 the same collection, using trucks entirely, has averaged $90.72 per week; a saving of practically 30 per cent, or $2,000 per year. Besides the financial saving, the work has been done more efficiently and has relieved the city from some of the labor and feed shortage. In the paper and rubbish collection the cost with truck is exactly equal to last year's costs with horses, based on this year's wages. This is because only one horse was retired. But the work is now done more quickly and over a larger area.

In the applying of nearly 80,000 gallons of bituminous materials, the motor spraying outfit saved about 1¾ cents a gallon, or a total of $1,400, aside from the convenience of not depending upon a contractor's outfits. Toward the end of the season a horse-drawn oiler was also used as a trailer in hauling material from the refinery. In hauling crushed stone the superintendent of streets believes a haul even as short as a mile can be made cheaper with trucks, and on one job 1½ miles from the crusher he gives actual figures of comparison: Each

Autocar hauled 20 tons per day at a cost of $6.54, or $0.327 per ton against each team's output of 12½ tons for $7.25, or $0.58 per ton, a saving of over 40 per cent. Sixteen of the street department horses, or nearly 50 per cent, have been sold, with the result that less space is occupied, overhead is cut, and the winter stable expense is reduced to a minimum.

Fire Department

The Chief of the Fire Department reports that prior to 1911, when the first piece of motor apparatus was purchased, there were 25 horses in service. The cost for the year 1910 was as follows: Repairs to apparatus, etc., $415; shoeing, $824.30; harness repairs and replacement, $172.90; hay and grain, $3,350.35; a total of $4,837.55 The Chief states:

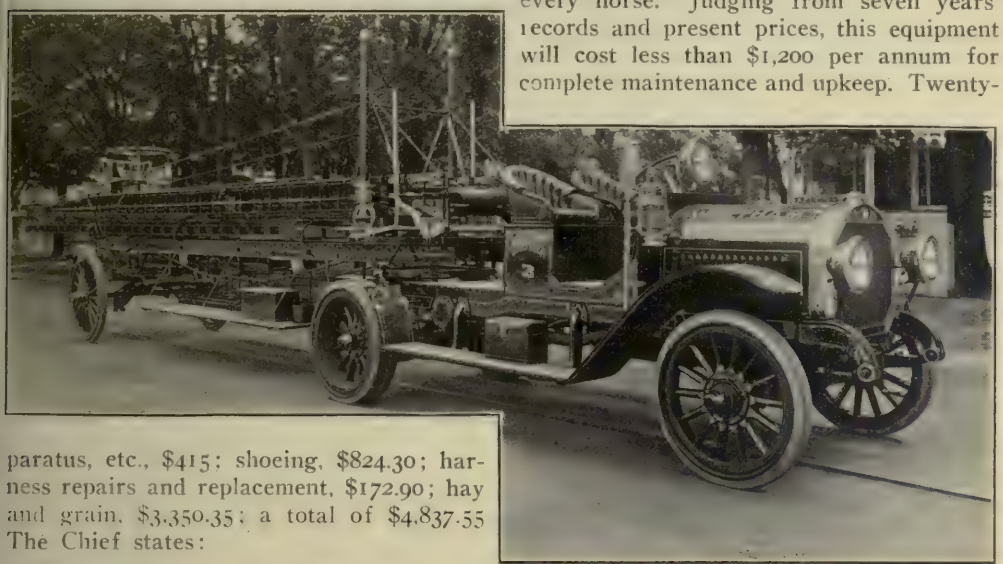
"We have now in service 8 pieces of motor apparatus which cover the work formerly done by 18 horses. The cost for the maintenance of this apparatus for the year 1918 will be under $1,000. With the present price of hay and oats, the cost of maintenance of 18 horses for the year 1918 would be about $4,500, a conservative estimate of only $250 per horse. This shows, already, a saving of $3,500 per year.

"The aerial truck shown in the accompanying photograph, equipped in July with a four-wheel tractor, displacing three horses, shows a great saving in the cost of upkeep for the month of August, 1918. The cost of gasoline was $2.50 and of oil, 10 cents. The cost of maintenance for the same piece of apparatus, horse-drawn, for August, 1917, was $55.60, a saving of $53 in one month. Calls and runs practically the same.

The saving over horse-drawn apparatus is a big item, but the great benefit to our city is in the quickness of response to fires; the running time is cut down over one-half in responding to alarms with the motor apparatus. In the last seven years several instances have been noted of the saving of valuable property in the outlying sections of the city by the quick response of the apparatus.

"The question of the length of service of motor apparatus has been widely discussed. We have one combination auto which has responded to every bell alarm in the city since October, 1912, over 1,000 runs. It generally carries from 20 to 24 call men, and it is in excellent condition at the present time."

From the above details an absolute comparison can be drawn between horse-drawn and motor-driven fire apparatus. Within thirty days the final two pieces will be delivered, four having been purchased this season. This will completely motorize the department with ten pieces, and will retire every horse. Judging from seven years' records and present prices, this equipment will cost less than $1,200 per annum for complete maintenance and upkeep. Twenty-seven horses would now be required for the same service, at a minimum maintenance cost of $250 per year, or $6,250 against $1,200. But this saving of $5,000 a year is only one side of the proposition of fire-fighting. Speed is vital, for the first three minutes of a fire are crucial. Coupled with this is the fact that with horses eight to ten men would be inactive because of horse duty, while with motor equipment every driver is an active fire-fighter the moment his apparatus arrives.



NEW MAXIM 4-WHEEL TRACTOR AND AERIAL TRUCK, WALTHAM, MASS.

Forestry Department

In the Forestry Department a 2-ton truck was purchased for general work thruout the year and spraying during the season. This

method of spraying has proved so economical that the heavier horse-drawn sprayers are required for much less time than formerly, and are able to concentrate upon one district at a time. The City Forester's horse and carriage were replaced by a light roadster, with the result that he was able to dispense with one foreman and one clerk, and cover his work four or five times as often as formerly.

The automobiles are operated for much less than the expense of horses, and labor has been reduced in the aggregate 12 per cent in spite of 20 per cent general increase in wage rates. The time saved in moving from job to job by autos instead of teams has more than doubled the number of gallons sprayed daily, and the outskirts of the city are covered more quickly, thus better protecting the city proper from the outlying infestations. The Forester claims that motorization has allowed him to triple his work, and this with less help and at less expense.

Police Department

Last year the Police Department, besides a heavy GMC combination patrol and ambulance, had no other vehicle except a discarded fire horse which did the double duty of hauling the slow wagon and the Inspector's buggy. This spring an excellent heavy touring car was purchased from a private citizen at practically a nominal figure. Half the back of the front seat was cut thru and provided with hinges and catches so that with two cushions it makes an excellent ambulance for emergency cases. A Pulmotor outfit and small fire extinguishers are carried. This car now responds to all alarms of fire and carries out all details and other special work. The horse has been retired.

The cost of operating both machines for the last eight months, including tires and all other expenses, has been $235, as compared with $252 for the same period last year for expense of the horse and one automobile. The efficiency of the department has been immeasurably increased by the added piece of motor equipment.

In General

The city of Waltham operates 30 pieces of motor equipment of various types. A strict daily record is kept concerning each machine, on simplified cards. Each card holds one month's data and is exchanged at the purchasing agent's office for a new card on the last day of each month.

All gasoline, tires and other equipment are purchased in large quantities at discount prices, and most of the smaller repairs are done in the city's repair shop. It is in no way an exaggeration to say that if all the motor equipment were to be discarded and the same service attempted with horses, the increased cost and loss of efficiency would total well over $10,000 a year. As a conclusion, it seems to us that to go back to horse-drawn equipment would be about as sensible as to return to horse cars for the rapid-transit solution of our cities.

C. A. BINGHAM,
City Manager.

PUBLIC WORKS DEPARTMENTS

Preventing Slippery Pavements

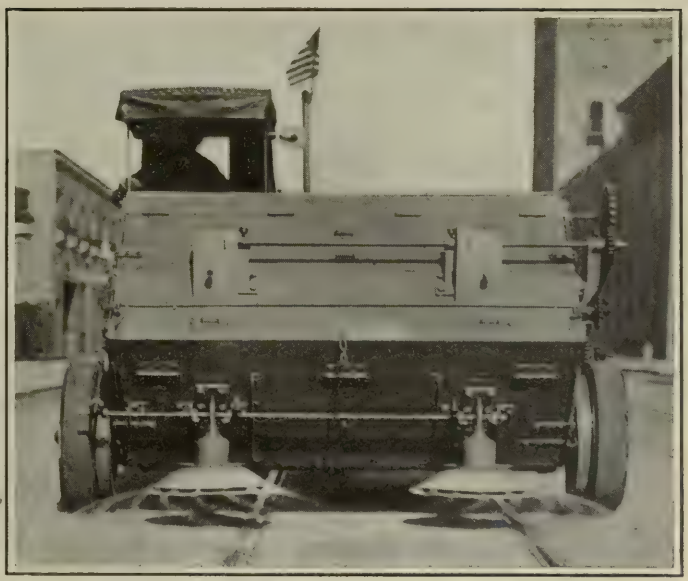
SAN FRANCISCO, CAL.—When it rains in sunny California it means business, for our rainy season is concentrated into a few weeks. During that period we cannot use our Elgin sweeper to advantage for sweeping or collecting the street refuse, and as we do not need it for spraying we have designed a new device which makes it available for wet weather.

By the addition of the attachment shown in the accompanying photograph, the Elgin becomes a sand-spreading machine which distributes clean sand very evenly over the pavement with a light or heavy coating, as desired. It is used on the occasion of public parades and on rainy, foggy days when the streets are slippery and dangerous to traffic, thus preventing many accidents which might happen from horses slipping or falling and from autos skidding. We have also made use of this sand attachment with considerable success in the removal of oil dropped by automobiles. It is the only successful method we know for removing such oil from smooth and bituminous pavement.

To make the change from the sweeping machine to the sanding machine, or vice versa, takes less than one hour. This sanding attachment can easily be incorporated in a separate and lighter chassis, thereby

making a machine which we believe will be in great demand; many cities are troubled by the problem of slippery pavements, and especially of oil on pavements,—a problem which will increase with the increased use of automobiles. With this sanding attachment mounted on a light chassis, the machine can also be used for distributing seeds on farming land. The machine has already been endorsed by the Mayor, the Board of Public Works, the Automobile Association of California, the Auto Accident Insurance Association, the Traffic Squad and the Society for the Prevention of Cruelty to Animals.

PETER J. OWEN,
Superintendent, Street Cleaning Department.



ELGIN SWEEPER WITH SANDER ATTACHMENT, SAN FRANCISCO, CAL.

Erie Insists on Unwrapped Garbage

ERIE, PA.—The city of Erie owns eighty-nine acres of ground four and a half miles from the city. On part of this is located a Morse Boulger incinerator; also two furnaces, each with seven charging holes. Each furnace will consume twenty tons of garbage in ten hours. The garbage is shipped by rail from the city to the plant, and the cars are run into the building and the contents shoveled onto the platform and then into the furnace. We have fourteen wagons for collections, with steel tanks 3 by 11 feet and 28 inches high. When the wagons are loaded, they are hauled to the loading station, situated near the center of the city and near the railroad yards; the tanks are then hoisted by electric crane and the contents are dumped into special railroad cars.

I have always considered it almost a crime to use good coal to burn up perfectly good garbage and good paper. I suggested to previous councils that the city should receive a revenue from its garbage, instead of having it all go up the smoke-stack. But, as the wrapping of the garbage was authorized by an ordinance of the Board of Health, I was powerless in the matter until the war came on. Realizing, last winter, that it would be impossible to obtain coal, and that the Government would request the public to conserve the paper, I took the matter up with the Superintendent of the Department of Parks and Public Property, of which the Garbage Department is a part. The matter was immediately acted upon by the Council and the Health Department, and on January 23 I was authorized to go ahead, the wrapping rule having been repealed.

Householders Given Warning

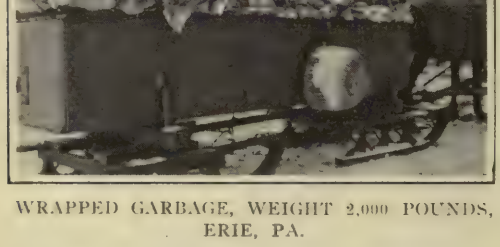
Believing that serious opposition would arise from the householders, plenty of time was given them to change from wrapped to unwrapped garbage. Public notice was given thru the newspapers, and the rule was supposed to go into effect February 1, 1918, but the collectors were instructed to be lenient until the middle of the month and then insist that the rule be complied with. As in all cases like this, there were some objectors, but as a rule the householders readily complied with the order as a "war measure." But oh, what a difference during the summer months, when we could not collect the garbage regularly owing to the drafting of men into the military service and the difficulty of getting men to drive

garbage wagons! Then there was a demand for more frequent collections.

Wrapping, Sanitary but Wasteful

Wrapping of garbage is the only sanitary solution of the garbage can around the house, but it is a very expensive system for the city, and incinerating is an absolute waste of good material. Under the "wrapped" system, it made no difference whether the householder had garbage or not, the can was always full when the collector called. Anything around the house that was of no further use, and could be wrapped in paper, went into the garbage can. Last year it cost the city of Erie $435 for doctor bills and compensation for collectors injured by glass, tin cans, and broken bottles, which were wrapped and put in the garbage can. So far this year, not one penny has been spent by the city for the same purpose.

The repeal of the wrapping ordinance will not produce any saving for several reasons. Last year, we had a contract for coal delivered at the plant for $2.48 per ton; we are now paying $4.95 per ton. If it were not for the fact that we have plenty of ground to spread and plow under the garbage, our appropriation would have been exhausted long ago. Until the Government took over the control of the railroads, we



WRAPPED GARBAGE, WEIGHT 2,000 POUNDS, ERIE, PA.

paid $6.49 per car for freight to the plant; to-day the freight is $15.45 per car. Last year the drivers and collectors received $3 per day; now they are receiving $4 per day and overtime. Everything else used by this department has gone up in proportion. Hay, straw, oats, horse-shoeing, etc., have almost doubled in cost.

There are four propositions before us now, all looking to getting some revenue from the garbage. Two of these are for the treating of the garbage to make chicken feed; another, for the reduction of garbage for the grease and fertilizer obtained, the other for the extraction of alcohol from the garbage. We are making a thorough study of each proposition, and will report to Council in a short time.



UNWRAPPED GARBAGE, WEIGHT 3,100 POUNDS, ERIE, PA.

Every wagon-load of garbage is weighed as it enters the loading station. Below is a report for six months of this year and the corresponding six months of last year:

Feb. 1 to July 31, 1917		Feb. 1 to July 31, 1918	
No. loads.....	3,797	No. loads.....	2,892
Tons collected.	3,333	Tons collected.	2,944
Avg. wgt. load.	1,755	Avg. wgt. load.	2,038
Coal, tons.....	514	Coal, tons.....	331
Cost coal.....	$1,274.52	Cost coal.....	$1,638.43

Less coal was used this year than last, owing to the spreading and plowing under of some of the garbage. Unfortunately, no record was kept at the plant of the number of tons so disposed of.

Garbage Collection Presents Difficulties

After six years of experience, I believe that the garbage question is the hardest problem that the officials of any city have to contend with. The conditions confronting the person in charge of the collection and disposal of garbage are different from those in any other department of the city government. He must have tact, diplomacy, "bull," if you want to call it by its right name, and unlimited patience. If the householder makes complaint about a collector, it is up to the superintendent to smooth out matters. You can't get college graduates to drive garbage wagons.

I believe "the worst is yet to come" for the garbage superintendent. With the enormous loss of men due to the war, and the number of men it will take from this coun-

ry to rebuild the shattered cities and towns of Europe, with the high wages paid,—which will have to be paid for some time in the shops and manufacturing plants of the country,—where are we to get men to collect garbage?

In the meantime, the public will have to accept the situation with patience.

JAS. D. TRACY,
Superintendent, Garbage System.

FIRE DEPARTMENTS

Individual Responsibility for Fires

PORTLAND, ORE.—Under a new ordinance it is unlawful in Portland for any person to maintain or to permit upon any premises controlled by them, any conditions that constitute a fire hazard. Whenever the Bureau of Fire ascertains that there exists on any premises in the city a condition which constitutes a fire hazard, the Bureau notifies the person in charge and orders the condition corrected. In case the notice is not promptly complied with, the person notified is guilty of a violation of the ordinance, and in case of fire resulting directly or indirectly from failure to remedy such condition, the offender is liable to a civil action for the payment of all expenses incurred by the city in extinguishing any fire resulting from such causes. The amount of such expense is to be fixed by the Commissioner having charge of the Bureau of Fire, and is to be paid into the general fund of the city.

In order that the people may be better informed that such a law exists, each inspector has been given a copy with instructions to advise the people on his tour of inspection. The knowledge that they are subject to arrest and fine for failure to abate the fire hazard and are also liable to the city for the cost of extinguishing such a fire, should it occur, has been a great help in obtaining results. We have not yet had occasion to put this ordinance to the test, but its existence on the statute books is already proving very helpful to this department in its work of fire prevention.

EDWARD GRENFELL,
Fire Marshal.

Official Chimney Sweep

ST. JOSEPH, MO.—Under an ordinance specifically creating the position, St. Joseph's official chimney sweep not only sweeps the chimneys of the city, but also inspects them and either repairs or reports all defects in flues to the Building Inspector or the Fire Warden for immediate attention. The ordinance requires that all chimneys within the limits of the city which have been in use at least six months shall be cleaned by the chimney sweep, who is paid by the owner of the building 25 cents per story for each chimney cleaned. Upon the owner or the occupant of a building is laid the duty of having the chimneys cleaned, under penalty of a fine. The official chimney sweep must pay a license fee of $50, besides being put under bond.

The official chimney sweep is not an experiment. It is an old-time European system transported to this country, but seldom enforced as it should be. We have had very good results here, and the situation is getting better all the time as far as the removal of fire hazards in flues is concerned. We are operating on the theory that the best way to conserve building material is to save the buildings themselves.

JAMES McBETH,
Inspector, Fire Prevention Bureau.

* *

Police and Firemen Compete—With Hoes

BRIDGEPORT, CONN.—Last summer the firemen and policemen of Bridgeport, Conn., vied with each other in producing food to help win the war. Twenty-five acres of some of the finest farm land on the shore of Long Island Sound were devoted to potatoes. About one-quarter of an acre was planted with corn, peas and other miscellaneous garden truck for the men's own use. The gardens proved to be a great success, and the members of the Fire Department and the Police Force are looking forward to another season with the hope of even outdoing the enviable record which they made. A representative from the Connecticut State Agricultural College visited the gardens during the summer and stated that they were by far the best he had seen.

DANIEL E. JOHNSON,
Chief Engineer, Fire Department.



LOWER CONCRETE WALL, SHOWING FLOOD-RUINED HOME IN BACKGROUND, ARROYO SECO, LOS ANGELES, CAL.

CITY ENGINEERS

Controlling an Erratic Stream with Concrete

Los Angeles, Cal.—The city of Los Angeles has recently completed an undertaking in flood control that, as an illustration of how such a problem may be handled by municipalities, is especially interesting.

Traversing the eastern part of the city is the Los Angeles River, which has for its chief tributary a stream almost as large as the river itself, called the Arroyo Seco, the conjunction of the two streams occurring well within the corporate limits of the city. During the dry season, which comprises the summer months, neither the river nor the tributary carries more than a tiny rivulet of water, but in rainy winter months they sometimes develop into raging torrents. Although its name signifies "dry ravine," the Arroyo Seco is even more treacherous than the so-called river into which it flows. Just before reaching its discharging point it traverses, for a considerable distance, a low, flat area, where its banks were shallow and irregular and composed of loose gravel. Hence, because of the nature of its embankments, the course of the stream during flood periods was subject to constant change, wandering hither and thither over the almost level expanse.

The nomadic habit of the stream and its dry condition during most of the year resulted in its bed being privately owned instead of being recognized as a public waterway. As the city grew, subdivisions were laid out adjoining the stream and conforming to its various curves as they existed at the date the land was subdivided. In some of the largest tracts, streets were provided, substantially following the Arroyo banks, the bed being divided into large lots held by the subdivider for their future value as gravel pits.

An unfortunate feature of this procedure was that the acceptance of the subdivisions by the city and the subsequent construction of dwellings on them fixed the Arroyo in a position having some abrupt curves in its alignment and obligated the city to maintain the streets adjoining its banks.

In 1910 the banks were cut by a heavy flow of water, and the city was put to some expense in restoring streets which had been washed away. In 1914 a record flood occurred. The Arroyo cut back its banks extensively at many places, washing out some twenty or twenty-five dwellings and destroying several thousand feet of streets. The banks were not overflowed, but instead were eroded until the buildings were

undermined and toppled into the stream.

Immediately after this flood, a company acquired rights to the gravel pit lots for about half a mile along the channel, erected a gravel-washing and rock-crushing plant, and commenced rapidly removing gravel by steam shovel. The operation of the gravel pit required a franchise to cross a street with an industrial railway, and this gave the city opportunity, without litigation, to enter into a coöperative agreement with the gravel company under the terms of which the excavation would be carefully made to lines laid out by the city and free aggregates would be furnished for protecting the sides of the excavation with concrete walls, the city providing the cement, forms and labor.

The work could be undertaken only at such points as the Arroyo was paralleled by adjoining streets, a portion of the street being used as right of way for the wall.

Walls are now completed for a distance of 3,200 feet on one side of the Arroyo and 1,600 feet on the opposite side.

The stream, as defined by the walls, has a minimum width of 120 and a maximum width of about 200 feet. The original bottom was less than five feet below the top of the present walls, but by steam shovels it has been cut, on the main channel side, to a total depth of approximately 15 feet. The concrete walls are of two slightly different types, and they also vary somewhat in height.

The principal wall, on the deeper or dredged side of the channel, is 21 feet high, vertical measurement, and is composed of two sections, each with a different channel-side slope. The base section is 11 feet high, with a slope of 1:1, and has a uniform thickness of 24 inches. The top section is perpendicular at the back, but has a batter slope of 1:3. It has an average height of 6 feet, and varies in thickness from 30 inches at the base to 6 inches at the top. This wall is provided, at each street intersection, with flights of concrete steps, cast in its face, to enable a person to descend into the bed of the stream.

The wall on the other side is also 21 feet high, and has a uniform batter of about 1:3.

Both walls are constructed of solid concrete without reinforcement. Screened sand and gravel were used principally, with



SECTION OF COMPLETED AND PARTLY FINISHED WALL USED IN CURBING WANDERING STREAM, LOS ANGELES, CAL.

larger stone and boulders worked into the composition, but kept away from the face. The bed of the stream is principally composed of sand gravel and small boulders, and therefore all material used in the wall's construction, except the cement, was immediately at hand.

The total cost of the completed work was $19,900, which was provided by an appropriation from the city's general fund. The work was done directly by the city, under the supervision of the city engineering department. Practically all labor was performed by men serving sentences in the city jail, and hence the city saved considerable money, as compared to what the cost would have been had labor been secured in the open market.

R. W. STEWART,
Engineer of Bridges and Structures.

- WATER - DEPARTMENTS

Tulsa's New Filtration Plant

TULSA, OKLA.—On the north bank of the Arkansas, west of the residence section of the city, is located Tulsa's new filtration plant, which is working so satisfactorily as to make probable the abandonment of the wells from which the city previously drew most of its supply.

The water of the river is badly polluted with sewage, refuse from oil wells and refineries, and is heavy with salt and mud in suspension. At all stages it carries magnesium in solution in the form of sulphates and chlorites. This river water is brought into a pump well by means of a canal and a flume which are frequently choked with sand and debris. We are now at work seeking a better intake to prevent this.

From the pump well the water is lifted by two centrifugal pumps of 4,000,000 gallons and 8,000,000 gallons capacity in twenty-four hours, thru a 30-inch pipe line, to the roughing basin. Here the heaviest suspended matter and the oil refuse are removed from the water.

Leaving the roughing basin, the water passes thru a 30- by 10-inch pressure difference tube, which not only measures and records the quantity of water flowing into the plant, but also operates the dry feed chemical machine so that they change their speed automatically and synchronously with the rate of flow. From this tube the water flows into the mixing chamber, where it meets the flow from the chemical machines and is mixed thoroly with it.

Of the chemicals used, the first is caustic lime; then soda ash and then sulphate of iron. After passing thru the mixing chambers, the water reaches the settling basin at reduced velocity, and coagulation takes place. The chemicals work on the water much as the housewife's egg shell works on the coffee, except that the water requires no boiling. Even with the thermometer below freezing, the operation takes place, and the impurities as well as the chemicals settle to the bottom.

After leaving the settling basins, the almost clear water passes to the filters. These consist of a 30-inch layer of sand and an 18-inch layer of gravel resting upon a strainer system. The water sinks rapidly thru this filter, leaving its impurities behind, and enters the clear well, from which it is pumped to the city.

Washing the Filters

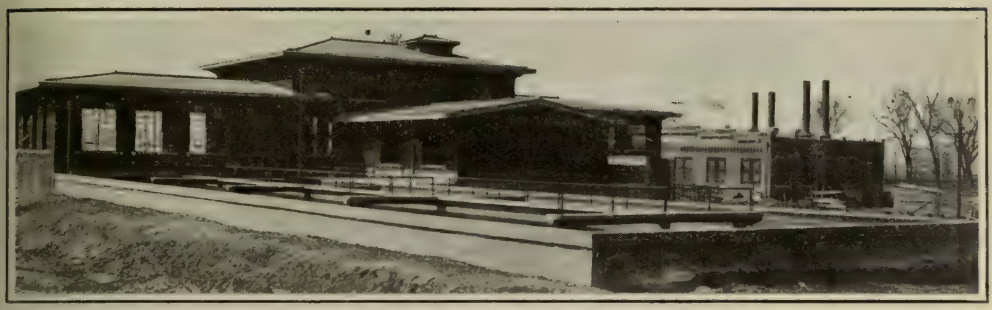
The filters naturally accumulate large quantities of sediment and must be washed often. For this purpose clean water propelled by a wash pump with a capacity of 5,000 gallons per minute is forced up thru the layers of sand and gravel, thru which the water passes in its regular downward flow. This wash water is then run off into a sewer, without coming in contact with the water which is being supplied to the mains.

A recent bond issue now permits the construction of a better intake, as already mentioned.

In order to be sure that all the chemicals used in the process are filtered out, hourly tests are necessary. So fine are these, that the presence of one part of chemical in 10,000,000 parts of water can be promptly detected.

In the construction of the plant, care has been paid to the external appearance as well as to the internal efficiency. A glance at the photograph will show that the new filtration plant is a municipal asset not only from a sanitary standpoint, but also from an esthetic standpoint as well.

By the expenditure of about $200,000, Tulsa has equipped herself with a modern up-to-date plant that will safeguard the



ARTISTIC NEW FILTRATION PLANT, TULSA, OKLA.

health of her citizens and at the same time make unnecessary the previous annual expenditure of $200,000 or more for bottled water. From every angle the citizens are convinced that the building of the plant was good municipal business.

W. R. HOLWAY,
Superintendent of Filtration.

- HEALTH - DEPARTMENTS

How Norfolk Procured Missing Birth Records

NORFOLK, VA.—For a number of years our birth records and birth reports probably represented about one-third of births actually occurring in the city. After writing numerous letters from time to time to the doctors and midwives of our city, and after checking up deaths under three years of age and ascertaining if these births had been reported or not, the records improved slightly, but still they remained inadequate and we were forced to undertake more active measures.

We then adopted a plan of making an entire canvass of the city from time to time, calling to our assistance the various city organizations among the women, particularly the fourteen Circles of the King's Daughters organization. We have succeeded in getting birth reports, I believe, second to no city in the South. We are now getting a birth report of approximately 26 per 1,000 per annum. Several years ago our death rate doubled our birth reports month by month.

The method adopted was simple and effective, and much like the methods used in recent war work campaigns.

We organized about 500 women, divided the city into twenty districts, with maps cut to represent these sections. We had the proper blanks printed and sent about twenty-five women into each of these districts, practically covering the city in one day, making a house-to-house visit and recording every birth that had occurred in each family for the last five years. This yielded some ten or twelve thousand reports that were then checked back against reports already received, and on births which had not been reported a report was procured from the doctor in attendance. The blank used tells who officiated at the birth.

Plan Followed Each Year

Since adopting this plan, we have carried it out each year. By this method we get the birth record, and we inform the parents as to whether the birth is reported. The doctors quickly see and appreciate the importance of what we are doing. The mothers are told how important these records are, and are requested to report any births unrecorded, and to insist upon a report of any birth in their family.

We have also made a practice of publishing bulletins and giving to the newspapers items on the importance, necessity and value of birth records. We adopted a plan of sending out a lithographed card to the family to hold as a birth record, but our State Department took that over and relieved us of this particular phase of the work. I believe these cards sent out from Headquarters are very valuable. The parents file them away and so have official records of their children's births at any time that they may have need of them.

P. S. SCHENCK, M.D.,
Health Commissioner.

PARK DEPARTMENTS

Louisville Builds Popular Self-Supporting Swimming Pool

Louisville, Ky.—To afford a means of recreation to the thousands of soldiers stationed at Camp Zachary Taylor, near the city, and to the citizens, the Board of Park Commissioners in the winter of 1917 took up the matter of constructing a swimming pool in Shelby Park. On July 27, 1918, the pool, measuring 160 feet in diameter, 8½ feet at its deepest point and 3 feet at its shallowest point, was thrown open to the public.



Courtesy of Board of Trade Journal, Louisville, Ky.

NEW CONCRETE SWIMMING POOL, SHELBY PARK, LOUISVILLE, KY.

The pool is constructed of reinforced concrete, and together with the administration building containing the shower baths, lockers, etc., represents an outlay of approximately $32,000, a sum which is probably 20 per cent greater than would have been required in pre-war times, on account of the greatly increased cost of all materials and labor which entered into its construction.

Altho it was July 27 before the pool was ready, in the short time it was in use this season—about six weeks—12,185 civilian men, 3,833 women and 5,104 soldiers made use of it, with revenues during that time of $4,799.20. These figures give an augury of what may be expected in the coming season. Already, as a result of the experiences of the past brief season, it is seen plainly that some of the accommodations will have to be enlarged to meet the unexpected popularity of the pool.

The water supply used was the regular city water, and in this Louisville is most fortunate, as few cities have water of such abundance and excellent quality. The pool was half emptied every other day, wholly emptied twice a week and at such times was washed down thoroly from top to bottom with city fire hose under fire pressure, so that at all times it was maintained in an absolutely pure and sanitary condition.

The Board fixed a charge of 25 cents for the use of the pool by civilians, and 15 cents for soldiers, which included a bathing suit, shower bath, use of the pool itself, and towel. This revenue more than met all expenses and fixed charges, and it is confidently believed that during the next season it will show a handsome profit for the Board.

HARRY G. EVANS,
Secretary, Board of Park Commissioners.

How to Stop Fires Before They Start

Such Fire Prevention Exhibits as This One in Newark, N. J., Might Well Be Made Permanent Municipal Features

IN the city of Newark, N. J., Fire Prevention Day was brought prominently to the attention of the public for a week before and a week after Saturday, November 2, by means of an exhibition displayed in the corridors and meeting rooms of the City Hall. The exhibition was arranged by Captain C. Albert Gasser, who has been the superintendent of the Bureau of Combustibles and Fire Risks in Newark's Department of Public Safety since the creation of the position in March, 1907. There have been previous exhibitions, but this year's show eclipsed all former attempts.

Extending along the sides of the meeting room where the Board of Fire Commissioners formerly held sway, the exhibits covered the walls of the corridor for more than 400 lineal feet. There were forty-three separate illustrations, and that meant at least forty-three minutes of observation. Charts, photographs, cautions, "don'ts" and records were arranged on standards ten feet high, against a background of green burlap. In a corner was a heap of floor sweepings and rubbish, partly covered with an old broom. A sign, "Do not let rubbish accumulate," attracted attention to the fact that such habits spell fire, for which no matches are needed if oily waste happens to be a part of the rubbish.

A Contrast in Kitchens

Household hazards were strikingly illustrated in two kitchens which had been built of 6-foot squares of wood for floors and backgrounds. One of these kitchens showed no less than twenty-two violations of the rules of common sense. An old stove which had suffered the amputation of one of its legs was propped up with a piece of wood and a brick, and this rested on the wooden floor without any protection underneath. In the oven were pieces of wood,



FAMILIAR FIRE HAZARDS IN CARELESS HOUSEHOLDS

ashes were scattered on the floor underneath the stove, and back of the stove were papers and floor sweepings. Ashes had been put in a wooden box, and matches were everywhere, some burned and some on the floor waiting to be stepped on. There was a kerosene oil can handy, and an old varnish can stood near-by. On a piece of string across the back of the stove were some bits of children's clothing left to dry. On the mantel were some benzine stove polish, an unprotected half-burned candle, some loose matches, a bottle of gasoline, some cigarette butts, a small half-used pot of paint and a brush or two. There was a swinging gas bracket above the mantel. Shelf paper was used for trimming, and paper had been stuffed into the chimney-piece to hold the stovepipe in place. There was a placard which read, "This untidy kitchen has twenty-two violations of the rules of common sense. Count them." Another sign said, "Compare this untidy kitchen with the clean kitchen next door."

The clean kitchen was equipped with a good stove, resting on a piece of zinc. The floor was clean; there was nothing in the oven, nothing on the stove, nothing back of the stove. On the mantel, which was neatly covered with oil cloth, were safety matches and a candle in a candle-holder. There was a non-swinging gas bracket, and a stove pipe that fitted, and the kitchen had a general air of tidiness. These two companion illustrations attracted considerable attention. Photographs of dwelling-house fires and such signs as "Don't put ashes in a wooden box," "Use safety matches," "Clean up and keep clean," were placed here and there to emphasize the lessons taught.

All Sorts of Fire Risks

On a long table lay fire-proof metal containers for moving-picture films, contrasted with several reels that had been thru theater fires, each one labeled with its own story. Here were films, both inflammable and fire-proof, and exit signs. An asbestos cloth booth had been erected, inside of which was an approved machine with all the appliances called for by the code,—extinguishers, water and sand pails, "No Smoking" signs, and rules for operators,—and a sign, "How movies were made safe in Newark."

The automobile proposition came next. There were three garages about three by four feet in size. One was of wood with sawdust on the floor to soak up the oil, rags everywhere, matches scattered about, parts of cars being cleaned in gasoline, and half a dozen other violations. The entire section was treated in the same way as the untidy kitchen display. The other two garages were of fire-proof material and were marked "Approved." Then there were extinguishers and fire relics, tail lights that had been burning while cars were being filled with gasoline, cans that had been condemned, and, by contrast, non-explosive cans, underground tanks, pumps, wheel tanks and appliances used in filling stations. Printed automobile regulations, caution signs and photographs completed this exhibit.

On two long tables were hundreds of relics taken from fires. There were a dozen oil cans, each with its story of women who had poured oil on kitchen fires and had paid the penalty with their lives. There was a plumber's torch marked "Price, $40,000." The story typed on a card showed that a church had been damaged $40,000 worth because of the careless use of this pot by a plumber. There were switches, wires and conduits that had been melted by lightning. Each exhibit carried its story, which often told of the loss of life due to carelessness.

A long board, painted red, carried 256 partly-burned matches which had been glued on at half-inch intervals. The sign, "There were 256 match fires in Newark in 1917, and these fires averaged $3,000 each in loss," called attention to carelessness in the use of matches, and photographs emphasized the statement. A glass case contained relics of the great Chicago fire of 1871.

On an ordinary flat-top desk covered with green burlap were two miniature Christmas trees, attractively decorated to hold the attention of the children. One was bedecked with cotton batting, wax candles, paper trimmings and inflammable stuff generally. The other had electric lights, was coated with asbestos fibre and sprinkled with ground mica to give it the glittering snow effect. The one was marked "Condemned" and the other, "Approved." Christmas "Don'ts" with signs and photographs were shown.

"The Small Boy's Delight," a bonfire made of leaves and paper and a few pieces of wood, with records of bonfire fatalities, was flanked by a wire incinerator, giving the wrong and the right ideas at a glance.

The hazards of illuminating gas brought into play a gas meter with glass top and sides so that folks could see what makes the wheels go round when gas is being registered, and a large assortment of gas tubing, some approved and some condemned. The dangers of the swinging gas bracket and of an unprotected open flame were clearly shown.

Then came explosives, including fireworks of the kind that used to be fashionable years ago when dynamite crackers big enough to blow one's head off and cannon of all shapes and sizes were used. As an offset, paper caps, sparklers and colored fire were shown. There were relics of Black Tom, of Kingsland and of Morgan, three ammunition wrecks in New Jersey.

The chemical display was unusually interesting. There was plenty of material at hand, for Newark is rapidly becoming one of the greatest chemical centers of the United States, and many of the munition plants are already being converted into establishments for the manufacture of dyestuffs. There were jars of dyes of many hues, bottles of all sorts of acids, and containers by the dozen of inflammable chemicals. But chief of all this display was a chart headed, "Products Derived from Coal." Eight feet square, this upright chart contained, under glass, samples of two hundred and two derivatives of anthracite coal, each one legibly labeled. The chart was loaned to the city by The Barrett Company of New York.

Then there were five or six hundred eight-ounce glass containers in which such things as picric acid, ammonium picrate, amotol, benzol, asbestos, black powder, smokeless powder, fire-proof solution, were bottled up—materials that had been submitted to the Bureau of Combustibles and Fire Risks from time to time.

A display of sprinkler equipments, with blue prints, literature and photographs, showed how fires which had started could be quickly extinguished.

This Fire Prevention Exhibit was unique and decidedly worth while in the opinion of the many people who visited it during the two weeks. The visitors included several thousand school children, who were much interested, taking notes as they walked around, so that they might write compositions for class exercises—a method of education of far-reaching importance.

"The New Social Order in America"

In a study syllabus under the above title, published in October, 1918, as the "cooperative product of a number of liberal thinkers," it is urged that "the basic ideals of social justice can very largely be realized by the simple retention and logical extension of the principle adopted and acted upon by the Government during the war in its dealings with soldiers and war workers, and that the machinery created for applying these principles may be capable of extension and perfection to deal adequately with the corresponding civilian problems. The proposed program covers social insurance, housing, education, recreation, regular employment, wage and price adjustment, health protection, efficiency and economy, taxation, government ownership, industrial democracy and peace settlement. Some very interesting suggestions are offered. Under "Social Insurance" it is pointed out, for example, that the plans being made for rehabilitating war cripples should be extended to industrial cripples. Under "Education" it is stated that "soldiers are tested mentally, and the most promising, in test and in action, are given opportunities for education as officers at government expense; the same principle fits civilians." (Copies of the pamphlet may be secured at 15 cents each from Hornell Hart, 807 Neave Building, Cincinnati, Ohio.)

Those who wish to make a study of other problems of readjustment and reconstruction which are primarily of a national character will find an excellent list of such problems in an article on "When the War Ends," by Alexander Fleisher in *The New Republic* for October 12, 1918. The same issue contains an article by Alvin Johnson on "Economics of Land Settlement," which has valuable suggestions for the installation of farm homes under the community system; and "Preliminary to Reconstruction," which discusses the advantages of a Congressional versus an Administrative Commission of Reconstruction in dealing with these great problems.



THE MUNICIPAL WATER AND LIGHT PLANT, COLUMBIA CITY, IND.

The Reconstruction of a Municipal Water and Light Department

The Experience of Columbia City, Indiana

By Frank T. Schultz

Superintendent, Columbia City Light and Water-Works Department

WHEN I was appointed by the Council of Columbia City as Superintendent of the municipal light and water-works plant, I had something on my hands and I knew it—so did the general public. Some of the officials thought that we should lease a coal mine, as the coal was being consumed as fast as the railroads could haul it in. They had a similar thought about the oil, as two barrels per month were being used. The lines were also in bad condition, being grounded anywhere. The service was very bad, and the Council wanted to sell the plant. However, I knew it was a money-maker if it was run anywhere near right.

The electric lines ran thru the business section of the town and thru all the trees, and every time we had a heavy rain and wind storm at night there would be a display of fireworks thruout the city. Then everything would be in darkness, and the people would howl while the employes and I would be groping around in the dark half of the night to locate the trouble, in order that we might have light for the following night. If it was not line trouble, it was engine trouble, or generator trouble, or boiler trouble—it was all trouble.

The Condition of the Plant

The pumps were just about "down and out." The rods, all scarred, would run only ten or twelve hours without being packed. We were using $1 to $2 per day for packing and then throwing water all over the pump room instead of pumping it around the city. Was it any wonder that the city officials wanted to lease a coal mine? How could a man give the service that the people wanted and should have with such a scrap-pile as this was? Moreover, there was no money to make repairs. The wells were in good shape at this time—we had two 8-inch wells and two 10-inch wells. These wells were producing all the water that the pumps could pump in their poor condition.

These were the conditions that I was up against. Not only was the machinery ready for the scrap-pile, but there was no money in the treasury to do anything. There was an indebtedness of $8,500 on the Electric Light Department and an overdraft of $678.86, with a tax levy of 30 cents on the

electric light. There was also an indebtedness of $16,000 on the Water-Works Department and a tax levy of 20 cents. Could you blame the city officials for wanting to sell the plant under those conditions?

At this time the boiler inspector came to the plant and reduced the steam pressure from 100 pounds to 90 pounds. This was in the winter of 1908, and it meant that we should have no street lights until after business hours. Then there was a great noise again, but I kept my shoulder to the wheel and saw the thing thru. We had at that time 611 water consumers and 306 electric light consumers, and we had a hard time to serve these people. We could not possibly take on any more consumers. I then went before the Council and explained to them that we should have to rebuild the boiler plant first of all and repair the water-works pumps so that we could protect the city in case of fire.

Beginning to Rebuild

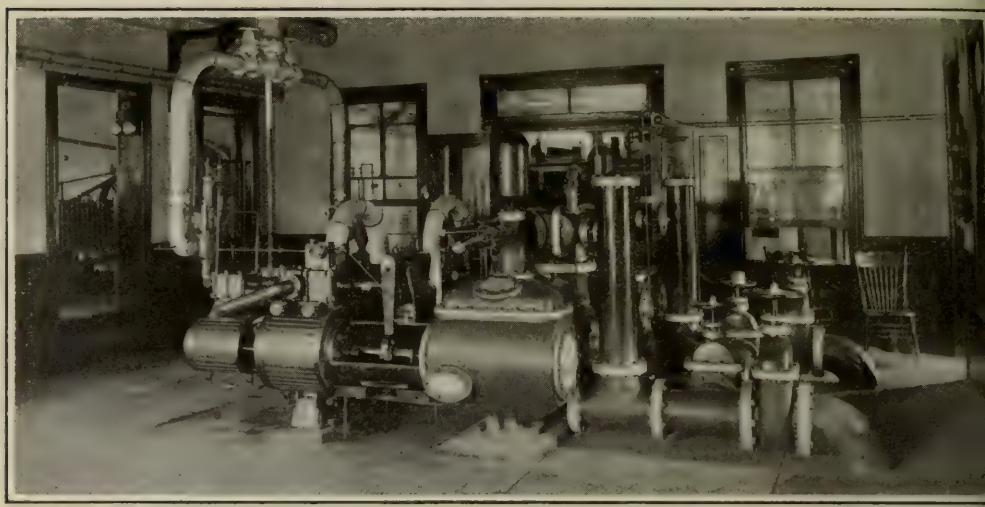
We dragged along under these conditions until we started to rebuild in 1910. In the same year we took up with the City Council the question of issuing bonds to the amount of $13,000 to make some very extensive improvements. The water-works pumps were thoroly overhauled and made as good as new. We also put down a new 8-inch supply well. This well was drilled 437 feet deep, and has proved very satisfactory. We also installed three Wickes vertical water-tube boilers of 200 H.P. each. The boilers have been in operation since August, 1910, and we have never used a compound of any kind—nor have we spent one cent for repairs on them since they have been in operation. We get the report from the boiler inspector that we have as good and as clean a boiler as any plant along his route. A clean boiler well bricked in means a saving in fuel. These boilers are cleaned every two weeks and turbined twice a year. The plant employes and I inspect them very carefully every time they are cleaned.

During 1910 and 1911, I was deeply interested in trying to get the City Council to rebuild the electric light plant and give the people day service. Many of the people did not want it and many did. There were all kinds of talking; some said that the day service would never pay and would be a burden to the people. I believed that if we ever got day service in Columbia City, it would pay and would be the means of bringing factories here which we should not be able to get if we did not have some inducement like that of a good and up-to-date, serviceable electric light and power plant. I knew that once we got this established, the people would wonder how they ever got along without it.

This proposition dragged along for a while, but at last I was instructed to prepare plans and specifications for the starting of day service, and also to make an estimate of its cost—then if the cost was too high, there would be nothing doing. As we were beginning to build up and did not want to go back again, I estimated this cost at about $18,000. After submitting the plans and the estimate to the City Council, I told them that we need not borrow any money to make these improvements, as we could pay for the changes out of the receipts of the plant as soon as it was finished and accepted. Our service at that time was only night service; and as our machines were 133-cycle, 1,100-volt, a new plant meant a change to three-phase, 60-cycle, 2,300-volt machines.

Plans were prepared and a contract was let for new machinery, which consisted of the following: one 200-K.W., three-bearing Westinghouse generator, belted direct from the fly-wheel of a 250-H.P. Corliss engine, which is very successful; one 150-H.P. Harrisburg Flemming engine direct-connected to a 100-K.W. Westinghouse generator, complete with new switchboard and terrill regulator; in addition, we had two 50-light-arc-rectifier tanks, good for one hundred 4-ampere, Type B, metallic Westinghouse lamps, which burn 175 hours per trim.

This machinery was all installed by the last of September, 1911, at which time we started our day service. Since then our plant has been run twenty-four hours per day, and the people do not know what it is to be out of service. They cannot understand how they ever got along without it; you could not take it away from them at any price; but what a task it was to convince some "knockers" that an up-to-date light and power plant would help build up the city! Since the reconstruction of the plant we have secured a woolen mill. This mill consumes 166 H. P. in motors. The



PUMP ROOM OF THE COLUMBIA CITY PLANT

more load we obtained, the larger were our receipts, with expenses about the same.

Other Improvements

In November, 1914, we put in a coal conveyor to unload all the coal to be used at the city plant. We also put in, in connection with the conveyor, a coal crusher, at a cost of $4,200. Before the erection of the coal conveyor we had to haul the coal to the plant at a cost of 40 cents per ton, and it was costing us from one thousand to eleven hundred dollars per year to unload the coal. In 1915, the first year after we put in the conveyor, it cost us $109 to unload the coal, or a little more than a dollar a car. In 1916, repairs and unloading cost $141.37; in 1917, repairs and machinery cost $166.07. This conveyor will pay for itself in a few years.

Our next plan was for a heating plant in connection with the light and power plant. The city officials and I made several trips over the state to investigate steam heating plants as to their success or failure. The plants we visited did not give us very much encouragement along this line, so the matter was dropped for a while. But it was soon taken up again, and we finally decided to build a line to the Court House and the City Hall and to two of the school buildings and thus make use of the exhaust steam that was going to waste.

The contract was let and work started. The heating plant has the vacuum system and is very successful. We have used live steam in these lines only from four to five days during the winter, all the rest of the time using nothing but exhaust steam. As nothing but exhaust steam goes into these lines, we get back to the plant all the condensed water, which then goes to the heater and is pumped back into the boilers. This is quite a saving in fuel. We receive $1,300 per year for heating the two school buildings and $1,200 per year for heating the Court House. We will also heat the new City Hall without any expense to the taxpayers. The heating plant cost $18,000 and is well worth the price. If it had not been for this plant, the schools would have closed this last year for the want of fuel. As it was, we were running the plant and heating those buildings for just the amount of coal that it took to run the plant.

The Present Electric Plant

In 1916 the plant was loaded to its full capacity and we were running both engines to care for the peak load. We had nothing to go on in case one engine should fail—it meant that we should have to shut off the factories in order to furnish light for the business houses and the residences. The matter of new machinery was then taken up by the city officials, and different plants were investigated. At the inception of the rebuilding of the plant, Charles Brossman, of Indianapolis, was engaged to prepare the plans and specifications for the new work, to the cost of $26,000.

The new unit consists of a 400-K.W.A

Crocker-Wheeler generator, direct-connected to a 600-H. P. Ames uniflow engine, and it is the largest uniflow engine in the state of Indiana at this time. The plant as it stands to-day consists of the following: three engines, total capacity, 1,000 H. P.; generator, capacity 700 K.V.A., complete with switchboard and terrill regulator; two rectifier tanks, 50-arc light capacity, each with 70 Westinghouse Type B metallic flame-arc lamps 4 amperes each, burning 175 hours on one trim; three 200-H.P. Wickes vertical water-tube boilers complete with piping; two feed-water pumps, with separate feed lines to each boiler; one Hoppes open-feed water heater, 600 H. P.; two vacuum pumps for taking care of the steam heating line.

We have rebuilt all the electric lines, transferring them from the business and residence sections and putting them in the alleys. We have also transferred all meters from the inside of the residences to the outside and on the back porches, which means a saving in time and labor when reading the meters.

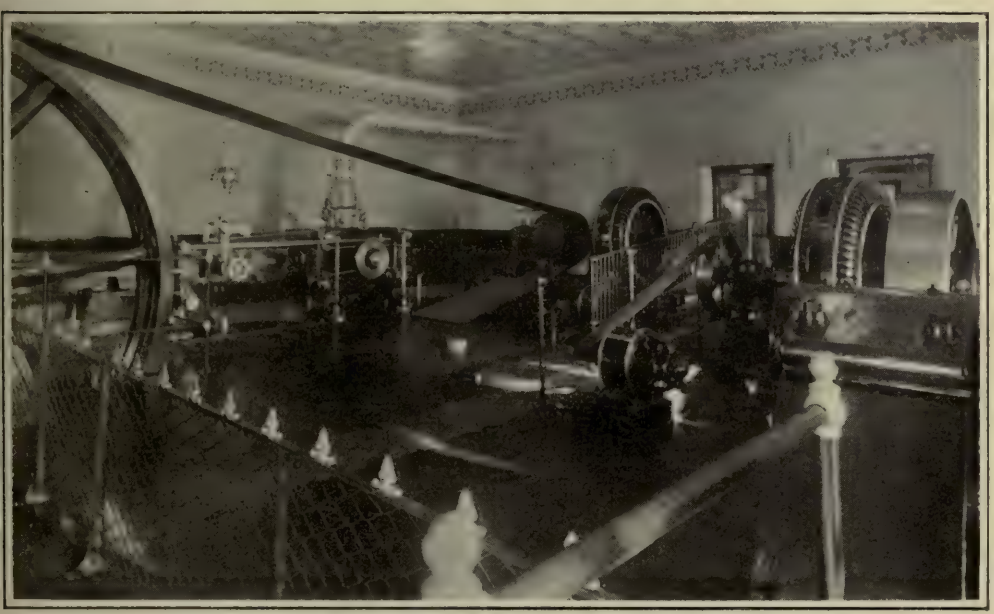
All these improvements have been made and paid for out of the earnings of the plant. The plant is kept up and all bills paid out of its earnings. There is a levy on the electric light plant of 5 cents, which on the amount of taxes collected gives the plant $1,787.18 per year. This is a very small item, as the city gets sixty-three 4-ampere street lights, forty-two 5-light clusters, four 75-watt bridge lamps, and six 60-watt alley lights. The city furnishes all the light meters. We have at present 947 consumers of light and power and 376 H. P. in motors connected. The earnings of the electric light and water-works plant from July 1, 1917, to January 1, 1918, are shown in the following statement:

Electric light receipts from July 1, 1917, to January 1, 1918	$16,449.39
Expenses of same from July 1, 1917, to January 1, 1918	11,898.99
Earnings of electric light department.	$4,550.40
Spent for new machinery and lines	1,883.84
Balance over all expenses	$2,666.56
Water-works receipts, July 1, 1917, to January 1, 1918	$4 5[illegible]2.54
Expenses same period	3,167.49
Earnings of water-works	$1,405.05
Spent for new work	1,152.86
Balance over all expenses	$252 19

These figures do not include the receipts for heating the Court House, the City Hall and the two schools. This revenue goes to the general fund, and is not counted in with the electric light receipts.

The Water-Works Department

The water-works equipment consists of the following: two 8-inch wells and two 10-



ENGINES AND GENERATORS OF THE COLUMBIA CITY PLANT

inch wells; two Worthington compound duplex pumps. Since the year 1907 we have laid the following water-mains: 295 feet 1-inch pipe, 245 feet 1½-inch pipe, 175 feet 2-inch pipe, 12,046 feet 4-inch pipe, 1,582 feet 6-inch pipe, making a total of 48,757 feet of water-mains of various sizes, with 107 fire hydrants. The total number of consumers is 926, of whom 93 are on meter. We have a levy of 5 cents for water-works, which means $125,102 for fire protection.

Looking the proposition squarely in the face, all must admit that the meter system is the only just method of buying and selling water. It is just as reasonable and logical to maintain that the grocer, the butcher and the milk dealer should throw away their scales and measures and furnish their product at so much per year, basing their charges according to the size of the house, or the frontage of the lot, regardless of the number of persons in the family. As to the claim that there is anything just or fair in selling by the flat rate system, I want to say that there is not only discrimination against the smaller consumer and in favor of the larger consumer, but the economical consumer is called upon to pay for the extravagant waste of his fellows. Water works men know that wherever the mete system has been adopted the saving o water and running expenses and new equip ment has been enormous.

A water meter is the water department' most careful inspector. It is also a divi dend-producer, because it increases revenu by reducing consumption and great wea and tear on pumps and machinery—whic also means a great saving of fuel. Meter also increase the efficiency of fire protectio inasmuch as they stop waste and enable th pumps to maintain an equal fire pressure a all times. While it is true that some ar dissatisfied with water meters, it will b found that such dissatisfaction is amon those who have wasteful fixtures and o whose premises there is defective plumbing

There is only one way to sell water, an that is by meter; and if it were left to me every water tap in connection with th Columbia City water-works would b metered in the next sixty days. Then eac and every water consumer would pay fo just what he used. What a saving it woul be on the coal pile, and what a dread i would take off the Superintendent's min in case of fire!

The Country Must Be Kept Morally Clean

Extract from letter to Civil Authorities from W. G. McAdoo, in behalf of the United States Public Health Service

November 20, 1918

"Under the protection of the military authorities four million soldiers and sailors received greater protection against venereal diseases than they received before the war in civil life. The cities and towns through which they go and to which they will return upon demobilization must be made safe. The fight . . . must be vigorously continued."

Extract from Telegram to Governors from Newton D. Baker, Secretary of War

November 13, 1918

"Signing of armistice in no way lessens responsibility of civil communities for protection of soldiers from prostitution and sale of liquor. Our states and cities ought never to lose the control which has been established or stop so vital a work . . . War Department is determined to return soldiers to their families and to civil life uncontaminated by disease."

Extract from Statement by Josephus Daniels, Secretary of the Navy

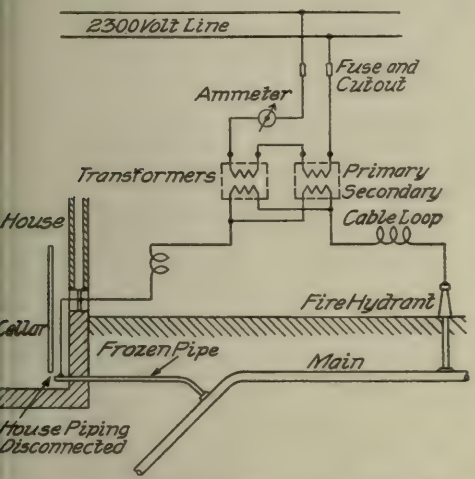
November 20, 1918

"One of the compensations for the tragedy of war is the fact that an enlightened opinion is behind the organized campaign to protect the youth against venereal disease. The campaign begun in war to insure the military fitness of men for fighting is quite as necessary to save men for civil efficiency."

Electric Thawing of Frozen Water Pipes

WITH the approach of cold weather, various public service commissions and those directly interested in the maintenance of water-supply naturally begin to worry about frozen water pipes. Within the last few years various methods have been devised for thawing the frozen pipe and, and among these electricity has proved most successful.

Electric thawing is effected by forcing thru the water pipe a current of sufficient value to heat the pipe above the melting point of ice. The scheme of connections shown in the diagram illustrates the general method, and the following description of the apparatus used should tend to eliminate all anxiety caused by freezing.



PLAN OF CONNECTIONS FOR ELECTRIC THAWING OF PIPES

For thawing out ordinary service pipes, a current of 150 amperes or more at 55 to 110 volts, applied for a few minutes, will usually be sufficient.

The following equipment has been found very satisfactory. Two standard 10 KVA, or larger, Type H distribution transformers connected for either 55 or 110 volts secondary. In the first case, primaries are connected in series with secondaries in parallel, while in the second case both primaries and secondaries are connected in parallel. The primary side of the transformers should, of course, be protected with suitable cutouts and fuses or an oil switch. An ammeter should be inserted in the primary circuit to avoid damaging transformers due to overload.

Experience has shown that no regulating apparatus is necessary, as variation in current may be had by changing the connections indicated above, and also by looping the secondary cables. No general information can be given as to the current and voltage for thawing out large pipes, because values will vary greatly, depending upon size and length of pipes, location, above or under ground, condition of soil, etc.

The following data have been obtained from various tests:

Size of Pipe in Inches (Iron)	Length in Feet	Amperes	Volts	Time
¾	100	135	55	10 min.
1	700	175	55	5 hours
2	50	500	50	2 "
4	800	300	50	3 "
6	400	800	110	2¼ "

On the Calendar of Conventions

DECEMBER 9-12.—CHICAGO, ILL.
American Public Health Association. Annual meeting. Acting Secretary, A. W. Hedrich, 126 Massachusetts Avenue, Boston, Mass.

DECEMBER 9-13.—CHICAGO, ILL.
American Association of State Highway Officials. Annual convention. Acting Secretary, A. D. Williams, Morgantown, W. Va.

DECEMBER 10.—HARTFORD, CONN.
Mayors' Association of Connecticut. Annual meeting. Secretary, Dr. J. M. Coburn, Norwalk, Conn.

DECEMBER 11-12.—CHICAGO, ILL.
Highway Industries Association. Joint convention with the American Association of State Highway Officials. The Secretary of the Highway Industries Association is H. G. Shirley, 1410 H Street, N.W., Washington, D. C.

JANUARY 13, 1919.—NEW YORK CITY.
American Institute of Consulting Engineers. Annual meeting. Deputy Secretary, B. Etchelle, 35 Nassau Street, New York City.

JANUARY 15-16.—NEW YORK CITY.
American Society of Civil Engineers. Annual meeting. Secretary, Charles Warren Hunt, 33 West Thirty-ninth Street, New York City.

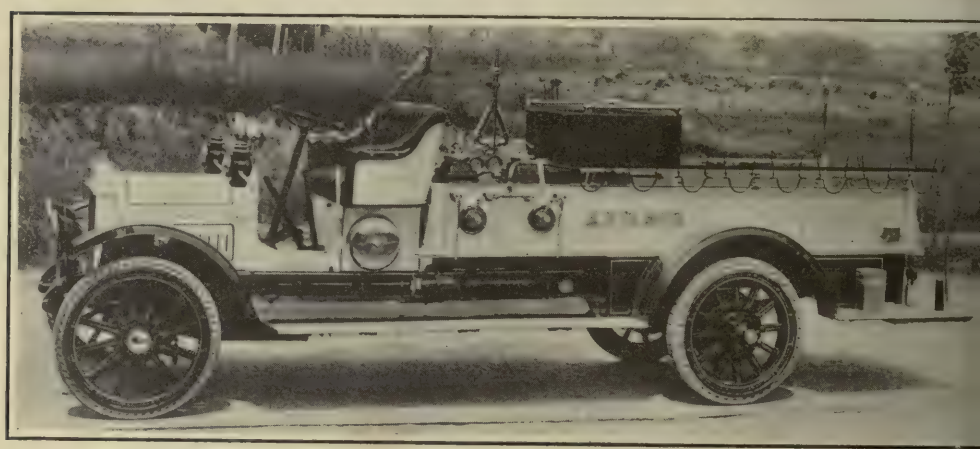
FEBRUARY 5-7.—CALGARY, ALBERTA.
Alberta Association of Local Improvement Districts and Rural Municipalities. Annual convention. Secretary, W. J. Jackman, Bremner, Alberta.

FEBRUARY 25-28.—NEW YORK CITY.
American Road Builders Association. Annual convention. Secretary, E. L. Powers, 150 Nassau Street, New York City.

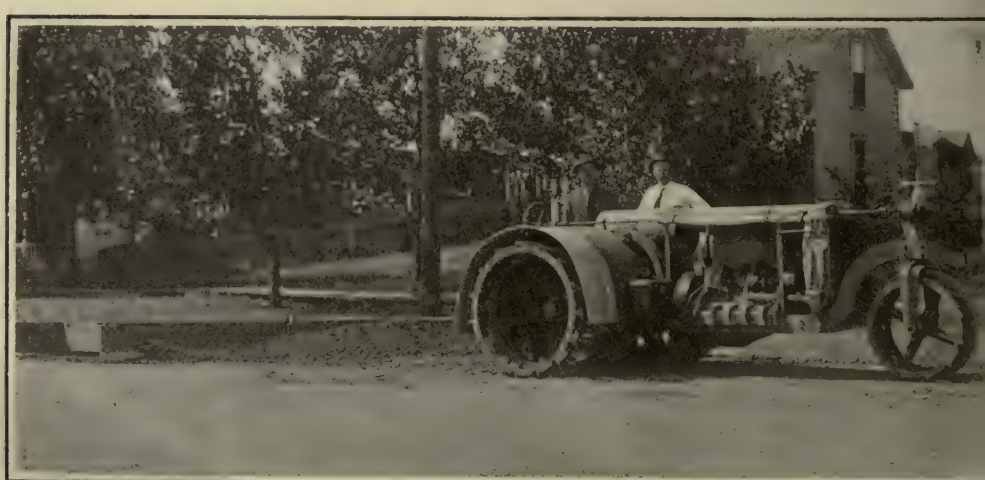
The Motor Truck Is Active in Many Fields o Public Service



FOUR-TON ACME FLUSHER TRUCKS USED BY THE CITY OF CLEVELAND, OHIO



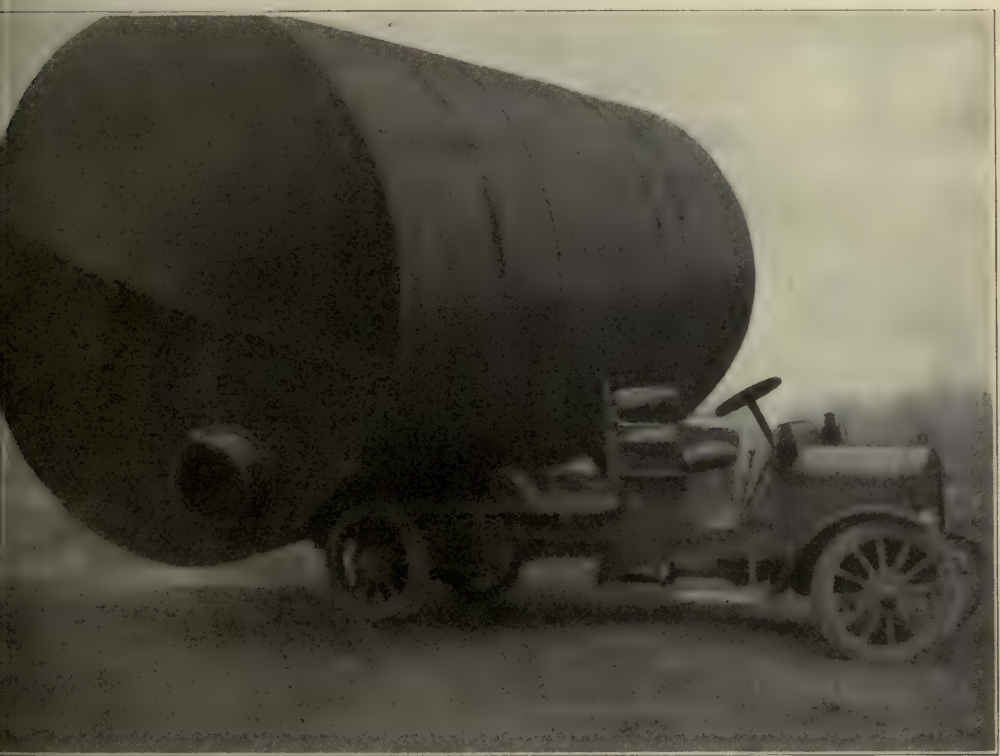
FEDERAL COMBINATION FIRE TRUCK AT AMSTERDAM, N. Y.



SAMSON SIEVE GRIP TRACTOR DRAWING A ROAD DRAG AT WATERVILLE, WASH.



CHAMPION SNOW PLOW ATTACHED TO A WHITE TRUCK, USED BY THE CITY OF AKRON, OHIO



HIS TANK, WEIGHING 7,800 POUNDS, WAS HAULED A DISTANCE OF FIVE MILES WITHOUT INJURING THE 1½-TON GMC TRUCK WHICH CARRIED IT

However, attention should be called to the evil of overloading. Too many truck users seem to think hat once a truck is purchased, the sky is the limit so far as loading is concerned. Overloading often breaks own a truck before its time; it turns a good piece of machinery into a piece of junk, and a satisfied truck wner into a dissatisfied one.

News and Ideas for Commercial and Civic Organizations

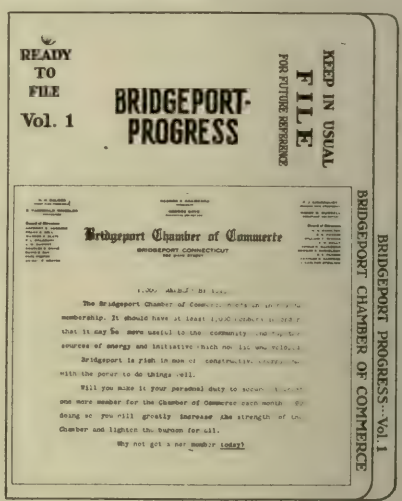
Dodging the Waste Basket

BRIDGEPORT, CONN.—Stripping the subject of all camouflage, is not the first requisite in publishing a chamber of commerce bulletin to produce one that will be able to dodge the waste basket? In every chamber of commerce there are men who, while taking a sincere interest in the organization, never read its bulletins, seldom attend its luncheons, and are more or less out of touch with its work, yet these men are the very ones for whom the chamber of commerce house organ is published. The problem of how to reach them and make them read the bulletin is a vital one, for no matter how good the bulletin is, it fails absolutely if it is not read.

The Bridgeport Chamber of Commerce has for the last year and a half published a monthly bulletin called *Bridgeport Progress* which endeavors to dodge the waste basket, and to a considerable extent it has been successful. The theory on which the bulletin was planned is briefly described as follows: File covers of stout cardboard 9½ by 11½ inches were prepared, properly labeled, and distributed among the members to file in their letter files. On the back was printed:

A Permanent File of Data
on
Bridgeport, Conn.,
and
Binder for Copies
of
Bridgeport Progress
Published Monthly by
Bridgeport Chamber of Commerce

The inside of the front cover of the file contains statistics regarding the city and other information likely to be needed from time to time by business men, such as the tax rate, the grand list, and the growth of the population. On the inside back cover are the names of the United States Cabinet officers and other important federal officials, also the names of the principal officials of the state of Connecticut and the city of Bridgeport. There is also a list of the for eign countries represented in the city's alie population, with the number of persons i each group. On the front is pasted on of the regular letter-heads of the Chambe with a personal message from the presiden The illustration below shows how the fron of the file cover looks.



The file cover was mailed with the firs number of the bulletin, and at the sam time, under separate cover, a letter wa sent asking the member to place the fil cover in his regular letter file and use it fo Chamber of Commerce correspondence; als asking that he instruct his filing clerk t file the copies of the bulletin in it, so tha any statistical matter that is published fron time to time might be preserved.

The bulletin is the regular letter-hea size and contains a minimum of four page In it may be inserted slip-in pages, printe either on one or both sides, sometimes i the form of circular letters and sometime as advertisements or special bulletins. In recent number a special yellow sheet wa included containing an appeal for assistanc to draft boards. The result was remark

able. So much assistance was offered that double the amount of clerical help needed was volunteered in twenty-four hours. Another instance was the distribution of a bulletin on fire prevention, which arrived just in time to warn manufacturers and owners of buildings of the danger from frozen sprinkler systems. This circular was unusual in appearance and very different from the stereotyped form of chamber bulletin. An autographed letter from a committee chairman, a bulletin on commercial economy, or a Liberty Loan circular with the imprint at the top serves as a page and attracts attention.

Practically no attempt is made to use display type, and, in fact, the object has been to make the bulletin appear crowded, thereby avoiding the appearance many house organs have of trying to fill the columns.

Other rules which are being observed follow:

Jokes are barred.

Serious consideration is given to serious subjects.

Occasionally a referendum is included.

The only poem which has ever appeared has been "In Flanders' Fields."

No space is wasted.

Short three- or four-line space fillers of an inspirational character are used plentifully.

Names of members are used wherever possible.

Dry accounts of meetings are barred, and unless a committee does something worth while, no mention is made.

The cost per issue is between $25 and $45, varying with the number of pages, an additional slip-in page, printed on one side, costing about $7.50 for a circulation of 900 copies.

MEIGS B. RUSSELL,
Assistant Secretary, Bridgeport Chamber of Commerce.

✣ ✣

Chamber Wins Commission Charter Election

SHARON, PA.—The directors of the Sharon Chamber of Commerce and the members of the City Council decided in a joint session several weeks ago that Sharon had outgrown its old form of boro government and should be placed among Pennsylvania's Third Class cities. It is generally conceded, moreover, that the boro system has many handicaps that make good government difficult regardless of the calibre of men who might be in office.

A charter committee was thereupon appointed to make a thoro study of the subject. The commission-manager form of government was desired, but that could not be obtained until Sharon had voted itself a Third Class city, which would automatically give the city commission government, a vast improvement over the present form. It was recognized that the question of whether the manager idea should be added or Sharon should proceed under the commission form could be decided in a subsequent election. The charter committee therefore recommended commission government under the Third Class City Act, and issued literature for general distribution pointing out the difference between the operation of the boro system and the proposed commission-government plan. The question was voted upon on November 5 and was carried by a large majority.

The Chamber of Commerce was indefatigable in its efforts to bring about a favorable vote, and is eminently satisfied with the results.

T. C. FITZ GIBBON,
Secretary, Sharon Chamber of Commerce.

✣ ✣

Canton Chamber's Headquarters a Community Center

CANTON, ILL.—When the reorganization of the local Commercial Club was effected, the new Chamber of Commerce fell heir to the old cramped quarters of the former organization, and it was a problem how the new organization, with its scant membership dues, was to finance the rental of quarters sufficiently large to be representative of the business interests of the community. More room for the expanded work of the organization was imperative, however, and when a large, centrally located department store closed up within a short time, the Chamber decided to avail itself of the opportunity provided to secure the first floor and basement for its quarters, if the means could be found. It was desired to make the organization's headquarters a community center for the entire city, and the space referred to was considered especially adaptable for this purpose.

In view of the use which the Chamber expected to make of the space, the owners of the building reduced the rent from $150 to $100 a month, which was a great concession, but even this rent was higher than the

Modern Lighting Method



THE OLD WAY

Two sets of poles.

Tubular steel for supporting trolley wires.

Cast iron standards for lighting.

DOUBLE EXPENSE

Unnecessary obstruction along the curb line.

Underground wiring absolutely necessary.

Difficulty of keeping both sets of poles in alignment.

THE ELRECO WAY

One set of Elreco combination p

The addition of bracket and as shown above transforms the pole into a combination trolley and lighting standard.

In this way you can secure up to street lighting at less than one-hal cost of a separate installation.

Lighting wires may be attache top of poles—saving all expe underground construction.

Curb line free from all unneces obstruction.

Get full details and catalog

Electric Railway Equipment Co

Manufacturers **Cincinnati, Ohi**

NEW YORK OFFICE **30 CHURCH STREET**

ncome from the membership dues warranted, and the Secretary persuaded the Board of Directors, much against their udgment, to allow him to devise and carry ut some plan whereby the money could be raised. He personally called upon the wealthiest man in the city, who agreed to contribute 25 per cent of the rental for hree years, and his partner agreed to do ikewise. The Secretary then selected a committee of eleven men, who started out vith him in a body with the subscription heet headed with those two donations. The lan was presented to various other merchants, and within six hours after the canass was begun, pledges amounting to 2,300, to be paid annually for three years, ad been secured. The directors at once roceeded to carry out the plans to make the hamber increasingly useful to the citizens.

The building is 186 feet deep and accommodates itself admirably to the purposes he Chamber has in mind. The portion ronting on the street, to a depth of 100 eet, will be attractively furnished with all he conveniences of a modern rest room, vhich will be connected by a stairway with he ladies' lavatories in the basement. Eighty feet of the floor space at the rear f the building is raised four steps above the rest room floor, making an attractive balcony and allowing light and air to enter the basement thru a wide, open stairway which leads into it. This balcony affords an open office for the stenographer and for the other offices of the Chamber, which are enclosed with glass and will be occupied respectively by the Managing Secretary, the Agricultural Promoter, and the War Activities Board. It also provides one large room for the meetings of the Board of Directors and the farmers. The offices all open from a light passage-way and are accessible thru each other. The rear basement will be used as a Boy Scouts' room until such a time as a suitable arrangement can be made for a grill or a tea-room.

FRANK E. BIRCH,
Managing Secretary, Canton Chamber of Commerce.

✣ ✣

Chamber of Commerce Office an Important Publicity Center

GLENDIVE, MONT.—This city claims to have the most unique Chamber of Commerce office in the country. The building is a compact, one-story structure, situated on the right-of-way of the Northern Pacific Railway and adjacent to the train station, so that all passenger trains stop in front of its door. Boxes of flowers in front of



GLENDIVE, MONT., CHAMBER OF COMMERCE BUILDING



BEHIND THE TIMES OR UP TO DATE? WHICH DO YOU CHOOSE TO BE?

Above is the old way of cleaning catch basins by hand, which is filthy, costly and conducive to spreading disease and pestilence.

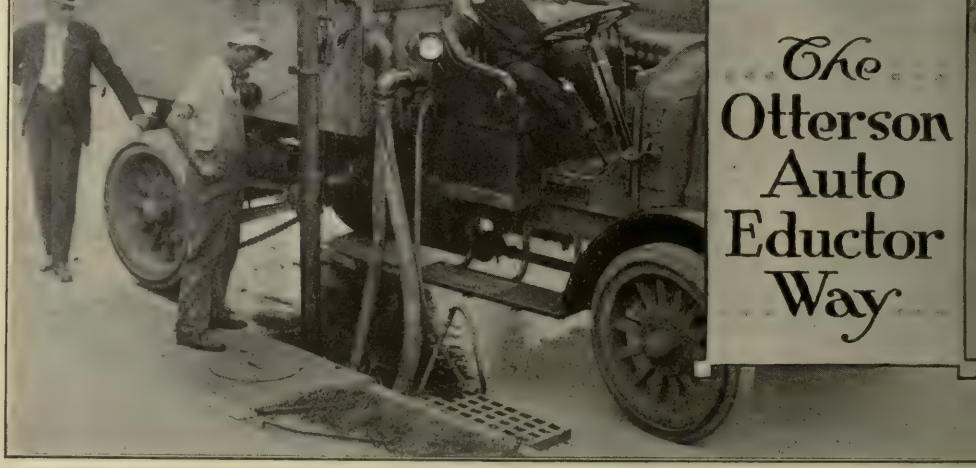
And below is the up to date way—the Otterson method, sanitary, efficient and economical with no menace to public health. How is it done? By means of the Otterson Auto-Eductor, which conserves time, labor, health and money for every municipality which uses it.

If CONSERVATION is the watchword in your city you ought to send us your address so we can send facts and figures showing the savings which the Auto-Eductor has made for other cities.

EQUIPMENT MOUNTED ON ANY 5-TON CHASSIS OF SUITABLE STANDARD MAKE

THE OTTERSON AUTO-EDUCTOR COMPANY

817 Fairbanks Building Springfield, Ohio

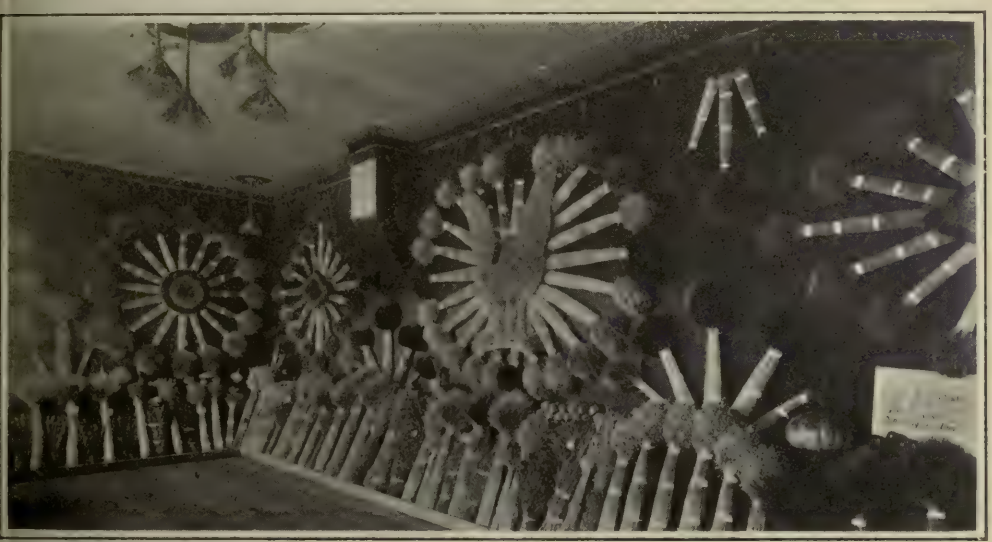


the entrance and outside of each window give the place a homey appearance and lure the visitor to a closer scrutiny. Appropriate signs bid him to enter. The office appointments are excellent, but the interior decorations excite the most curiosity and arouse the greatest admiration. Both an exterior and an interior view are shown herewith.

The decorations are made of the various grains grown in Dawson County, of which Glendive is the county seat. The frieze is of oats and flax kernels knitted so closely as to suggest painting. Likewise, the ceiling contains many beautiful designs constructed of oats, flax and grasses. In place of the usual brass chandelier chains, there

On a slanting platform along three sides of the building are neat bundles of the grain, grasses, etc., grown in the county, and each is labeled with the name of the product and its history in the county, so that a visitor can readily learn the facts for himself. There are also the usual samples of grain in jars and bowls. The corn grown in this territory is displayed on a swiveled cone built in the shape of a huge ear of corn. Such farm produce as can be kept is spread over the shelves. The office is heated with natural gas. Samples of the coal found in the vicinity are also exhibited.

As Glendive is a division headquarters for the Northern Pacific Railway, all thru



AN INTERIOR VIEW OF THE GLENDIVE, MONT., CHAMBER OF COMMERCE BUILDING

are ropes of woven grain stems, and over the windows, to simulate overdrapes, are designs worked out with alfalfa flax on the stem. On the walls are the usual circular bundles of wheat and oats in sunburst designs radiating from diamonds and medallions laid out in oats, flax and grasses. The central piece, however, is a large American eagle with outstretched wings. The head and wings are made of Marquis wheat heads; the beak of ground yellow dent corn; the upper body of Durum wheat heads, and the lower body of the same material but with the wheat bearded, while the legs and talons are small ears of yellow and reddish corn respectively. The whole makes an impressive and striking picture.

passenger trains stop at least ten minutes, which enables the traveler to inspect the exhibit at the Chamber of Commerce. Each visitor is given not only the customary publicity booklet, but also a neat stamped post card containing pictures of the Chamber of Commerce office, with the request that it be mailed to a friend. Visitors are also requested to register their names and business. All in all, the Glendive Chamber of Commerce building is indicative of Western aggressiveness and business acumen.

Like most commercial organizations, the Glendive Chamber of Commerce is now devoting most of its energies to war work. In order to coördinate all war effort and eliminate duplication and waste, it organ-

BOWSER
ESTABLISHED 1885

Conservation Instead of Destruction

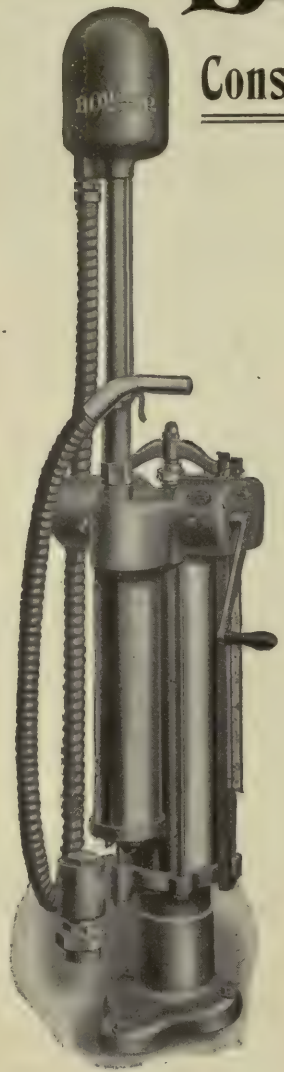


Figure 101. 5-Gallon Quick Return Pump—For use with Fireproof Underground Tank.

$267,560,740.00

was America's Fire Loss for the year 1917

80%

of it was due to carelessness.

The dangerous, inefficient methods of storing gasoline caused a large percentage of this loss.

BOWSER
ESTABLISHED 1885
SYSTEMS

are *"Safe Efficient and Economical"*

They bear the Underwriter's Label.

MORE THAN

56,450,000

gallons of gasoline are wasted every year. Hundred of Thousands of barrels of Lubricating Oil are wasted annually.

80%

of these losses are due to careless handling.

BOWSER SYSTEMS

would have conserved the greater portion of materials thus destroyed.

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Don't delay—write today for literature. We'll help you conserve

Life Property **Time Labor**

S. F. Bowser & Co., Inc.

Fort Wayne, Indiana, U. S. A.

Sales Offices in all Centers **Representatives Everywhere**

zed the Dawson County War Council, a ody composed of representatives from of-cial and unofficial war bodies and officers. t conducts all campaigns thru a body of ver six hundred war workers, each of hom has a specific duty to perform in a iven territory. Dawson County over-ubscribed its allotment of the Third Lib-rty Loan 250 per cent, and of the Second ed Cross War Fund 125 per cent.

JOSEPH J. ERMATINGER,
Secretary, Glendive Chamber of Commerce.

A Farm Products Exhibit

EMPORIA, KANS.—The Agriculture Com-ittee of the Emporia Chamber of Com-erce conducted a very successful county roducts show during the week of October 8. Besides the usual entertainment fea-ures, including a patriotic parade, a very omplete and interesting exhibit of all inds of farm products contributed by the yon County farmers was presented. The chools of the county also had displays il-ustrating their various agricultural ac-vities.

The following six divisions of what is alled county club work were represented: he Mother-Daughter Canning Club, which ad exhibits of canned fruit and veg-tables; the Pig, Sow and Litter Club, ex-ibiting a single pig and the sow and litter; the Bee Club, with its exhibits of bee-hives and honey; the Poultry Club, exhibiting various breeds of chickens and eggs; the Bread-Making Club, and the Garment-Making Club. Prizes were awarded for the excellence of the displays.

This was the annual Lyon County Farm Products Show, and it was entirely financed by the Emporia Chamber of Commerce.

J. M. SILVEY,
Secretary, Emporia Chamber of Commerce.

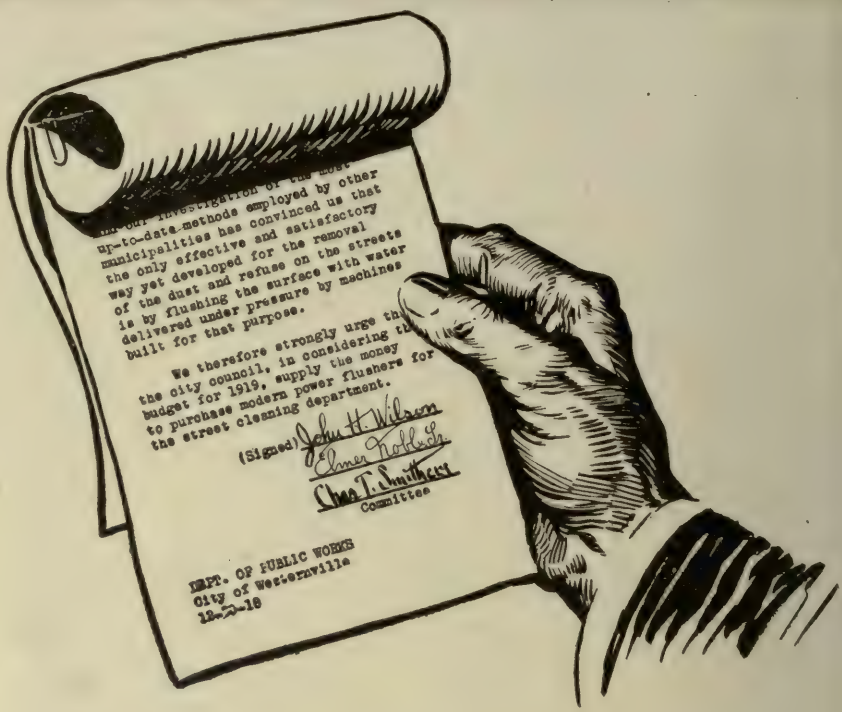
A Bird-House Exhibit

OKLAHOMA CITY, OKLA.—A unique exhibition of bird-houses—unique both in the number and variety of the structures—is shown in the accompanying reproduction of a picture of the work of the children in the grade schools of Oklahoma City. The exhibit was held in the rooms of the Chamber of Commerce. After prizes were awarded according to the adaptability of the houses to the birds for which they were built and their originality of design, the houses were auctioned off and the proceeds were given to the Red Cross. Such an exhibit offers suggestions of value to those who are looking forward to interesting the children in the bird life of city parks.

HOWARD FIGG,
Assistant Secretary, Oklahoma City Chamber of Commerce.



THE BIRD-HOUSE EXHIBIT HELD IN THE ROOMS OF THE OKLAHOMA CITY CHAMBER OF COMMERCE



Flushing your streets
removes dust as well as dirt

Statistics show that street dust plays an important part in the dissemination of germ disease.

Sweeping removes everything except **dust** — flushing removes all forms of dirt and refuse, *including dust.*

Leading motor truck manufacturers are prepared to furnish their standard trucks equipped with Studebaker Uniform Pressure Power Flusher Units. The performance of the Studebaker has merited their recognition and indorsement.

Now, while making up your budget for 1919, give careful consideration to this highly important matter of street flushing.

Studebaker

South Bend, Indiana

Largest Manufacturers of Vehicles in the World

3010

A Perpetual City Directory

TWO RIVERS, WIS.—A city directory has been completed by the Two Rivers Chamber of Commerce, with practically no expense, thru every person's voluntarily giving the information desired for its compilation.

In the search for a systematic method of distributing sugar in the county, a card designed to last the customer four months was issued by the Chamber of Commerce, in whose building office room was provided for the Deputy Food Administrator. The fact that sugar cards would be distributed for the months of September, October, November and December between the 15th and 31st of August was then advertised. When these dates arrived, sufficient help was secured to issue the cards and at the same time obtain the information for the directory cards which had been printed and were ready to be filled out. The head of each family who applied for a sugar allotment card was asked these questions:

What is the name of the head of the family? Age?
What is his occupation?
Maiden name of wife? Age?
Present address
Names of children and their ages
Full names of boarders or roomers, their occupation and age

This resulted in obtaining a complete census. All removals and arrivals are reported by the local draymen and recorded at once, which makes the record accurate at all times.

CHARLES B. WAGNER,
Secretary, Two Rivers Chamber of Commerce.

✣ ✣

Junction City to have a Municipal Hospital

JUNCTION CITY, KANS.—The Chamber of Commerce of this city has undertaken to provide Junction City with a modern, fireproof hospital. Kansas has a law which makes it comparatively easy for any city in the state to acquire a hospital. A petition must be signed by at least 40 per cent of the electors who voted at the last election. The mayor and the city commissioners will then pass a resolution declaring that a hospital should be erected, decide upon the tax levy, and publish the resolution for three weeks in the daily papers. If no petition of remonstrance, signed also by 40 per cent of the voters, is filed, the hospital may be established. If necessary, ten mills may be levied for the building of the institution. After the hospital has been established, three trustees are appointed to operate it. A levy of one mill per year may be expended for its maintenance.

The Chamber of Commerce conducted the campaign for the building of the hospital in Junction City. The people signed up gladly; in fact, the number of signers was largely in excess of the number needed.

Junction City is one of the fastest-growing municipalities in the Middle West. It is located within three miles of the geographical center of the United States and is in one of the best stock-raising and agricultural sections to be found in the country.

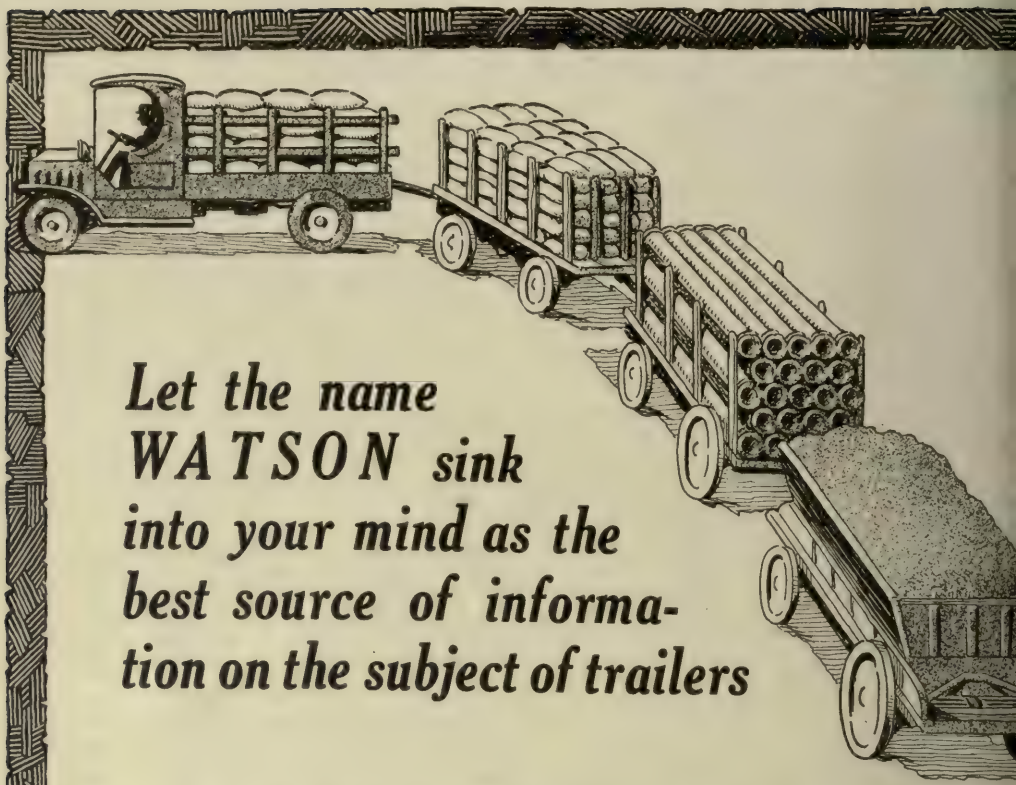
J. G. SCHERF,
Executive Secretary, Junction City Chamber of Commerce.

✣ ✣

High School Graduates Assured a Good Start in Life

DALLAS, TEX.—A clearing-house has been established in Dallas thru which the graduates of the city's educational institutions, especially the high schools, who complete their courses with creditable records, will be helped into the positions for which they are best fitted as soon as they leave school. This is a part of the recently announced program of the Dallas Chamber of Commerce and Manufacturers' Association to more closely cement the commercial, industrial, educational and civic interests for the upbuilding of Dallas.

A committee of the Chamber of Commerce and Manufacturers' Association, composed of prominent educators and business men, has asked all members of the senior classes to register with it and to state the lines of business they expect to follow after graduation. J. F. Kimball, the superintendent of schools, approves the plan and will serve on the clearing-house committee. The Board of Education has authorized Mr. Kimball to arrange courses of study in conformity with the need for specialized training in the industries and the general commercial interests of the city. Mr. Kimball expressed his personal appreciation of the opportunities afforded by the broad policies of the Chamber of Commerce and Manufacturers' Association, and feels that the Chamber's advocacy of vocational instruction will make more effective the educational aims of the Board of Education and will make the people



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When you think of using trailers send us your address. Our advice and suggestions are free—and perhaps our experience in solving trailer problems for others will help you to get just the right sort of equipment to make the greatest possible reduction of your haulage expense.

We also make semi-trailers, dump trucks and dumping wagons of all desirable types. Why not send for our catalog?

Watson Wagon Company

30 Centre Street **Canastota, N. Y.**

realize better the purposes of the educational system.

The clearing-house feature, according to T. E. Jackson, president of the Chamber of Commerce and Manufacturers' Association, revolves around the idea that the high school and college pupils of to-day will be our business men and women of to-morrow, and it is essential that they be shown the value of coöperation and be made to realize that the central business organization of the city is vitally interested in their future development and prosperity. "Students will be given this assurance," Mr. Jackson states, "upon compliance with certain requirements with respect to registration, and an expression on their part of willingness to enter into a coöperative spirit of civic and commercial usefulness."

G. S. MAXWELL,
Secretary, Dallas Chamber of Commerce and Manufacturers' Association.

Home News for Soldiers and Sailors from the Tonawandas

TONAWANDA, N. Y.—*The Tonawandas,* the official publication of the Chamber of Commerce of the Tonawandas, is being sent to all the boys who have gone into military service from these cities. The bulletin is very popular with the boys because it gives them in concise form a great deal of the important news of the community. This action is also making many friends for the Chamber among the relatives of the boys; it is thought it will have the effect of binding the boys more closely to the community and to the Chamber of Commerce and will result in a more active relationship with the Chamber upon their return, which will probably take place before many months.

CHARLES W. WARD,
Secretary, Chamber of Commerce of the Tonawandas.

Changes Among The Secretaries

A list of the recent changes and new appointments occurring among the secretaries of commercial and civic organizations thruout the United States.

Readers are asked to notify the Editors of such changes as soon as they occur, in order that the list may be made as complete as possible each month.

B. A. AHRENS has been elected secretary of the reorganized Waterville-Winslow Chamber of Commerce, at Waterville, Me. Mr. Ahrens was formerly assistant secretary of the Oklahoma City Chamber of Commerce.

WILLIAM A. ANDERSON has resigned the secretaryship of the Sheridan, Wyo., Commercial Club, to take up Y. M. C. A. work with the American Expeditionary Forces. He is succeeded by Tilden A. Morris.

M. E. BACON, of Oregon, Ill., has been elected secretary of the Commercial Club and County Fair Association at Spencer, Ia.

A. L. BARBER has resigned the secretaryship of the Conway, Ark., Commercial Club, to engage in Y. M. C. A. Army work. He is succeeded by W. D. Cole, Jr.

FRANK BLAHNIK is the new secretary of the Green Bay, Wis., Merchants Association.

RAY W. DAVIS has been elected secretary of the St. Joseph, Mich., Chamber of Commerce.

WALTER C. DENMARK has been selected as the new secretary of the Goldsboro, N. C., Chamber of Commerce.

STARKEY DUNCAN has been elected secretary of the Stamford, Tex., Chamber of Commerce.

ZACHARIAH T. DUNGAN is the new secretary of the Huntington, Ind., Commercial Association.

E. W. ESTES has resigned the secretaryship of the Broadway Association, New York City, to accept the secretaryship of the recently organized Thirty-fourth Street Association, also New York City.

E. G. FAIRFIELD has resigned the secretaryship of the LeMars, Ia., Commercial Club, to accept the secretaryship of the Muscatine, Ia., Association of Commerce.

E. J. FELLOW has been elected secretary of the Lebanon, Pa., Chamber of Commerce. Mr. Fellow had been connected with the War Camp Community Service, prior to which he was secretary of the Rockford, Ill., Chamber of Commerce.

L. A. GREENE, industrial commissioner of the Fort Worth, Tex., Chamber of Commerce, has resigned to accept a position in the business field.

DONALD C. GREENMAN has been elected secretary of the Chamber of Commerce of Enid, Okla., succeeding Ralph G. Grassfield.

O. R. HARDWELL is the new secretary of the Chamber of Commerce at Freeport, Ill.

FRANK P. HARRIS is now secretary of the Bentonville, Ark., Community Club. Rev. C. E. Myrick, the former secretary, is now engaged in Y. M. C. A. Red Triangle League work.

Most Miles per Dollar

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First to build truck tires—

First to build the channel type of truck tires—

First to build removable truck tires—

First to build the cup cushion truck tire—

First to build a complete line of tires for all commercial vehicles—

First to build a successful giant truck tire—

First with the grooved tread giant truck tire—

First with a practical, efficient giant cord tire equipment, including demountable rims—

First to establish 500 dealers with hydraulic presses and service facilities in leading cities throughout the United States.

The only manufacturer that makes the tire and rim complete. *Result*—

Half the truck tonnage of America is carried on Firestone Tires

FIRESTONE TIRE AND RUBBER COMPANY
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BRANCHES AND DEALERS EVERYWHERE

FRED E. HILTON is the new secretary of the Perth Amboy, N. J., Board of Trade.

CHARLES M. KETCHUM has resigned as general manager of the Wheeling, W. Va., Chamber of Commerce, to accept the secretaryship of the reorganized Fall River, Mass., Chamber of Commerce.

HARVEY F. KRESS is the new secretary of the Manitowoc, Wis., Merchants Association, succeeding C. J. Primm.

ALFRED O. LLOYD, secretary of the Chester, S. C., Chamber of Commerce, died recently of Spanish influenza.

R. H. MCCLURE has resigned the secretaryship of the LaSalle, Ill., Chamber of Commerce, to become associated with W. E. Fitch in organization work. He is succeeded by James F. Bryan, formerly secretary of the Creston, Ia., Commercial Club.

R. O. MCCORMACK, secretary of the Wichita, Kans., Board of Commerce, died on November 10.

FRED W. MALLY is the new secretary of the Laredo, Tex., Chamber of Commerce, succeeding Joseph W. Kenney.

W. C. MASSEY has resigned the secretaryship of the Thomas County Commercial Association of Thomasville, Ga., to accept a commission in the Army. He is succeeded by J. H. Leversedge.

CHARLES METCALF has resigned the secretaryship of the Antigo, Wis., Association of Commerce. He is succeeded by Mrs. G. C. Dickinson.

H. E. MOFFITT is the new secretary of the Brattleboro, Vt., Board of Trade. Mr. Moffitt succeeds Herbert E. Stiegler, who has entered the military service.

VAL NESS has been elected secretary of the South Side Commercial Club of Minneapolis, Minn., succeeding O. C. Fremo.

A. L. OLIGER has been elected secretary of the Topeka, Kans., Chamber of Commerce.

JOHN A. OSOINACH is the new membership secretary of the Memphis, Tenn., Chamber of Commerce, succeeding Daniel L. Ross, who has accepted the position of secretary of the Cotton States Merchants Association, with headquarters at Memphis.

H. E. OWEN, formerly of Columbus, Ohio, is the new secretary of the Beloit, Wis., Chamber of Commerce.

HARRY F. PALMER is the new secretary of the Wabash, Ind., Commercial Club.

JOSEPH PERKINS has been elected secretary of the Americus and Sumter County Chamber of Commerce at Americus, Ga.

V. O. PETERS has resigned the secretaryship of the Shelby, Ohio, Commercial Club.

J. WILLIS PETERSON has been elected secretary of the Business Men's Association of Galesburg, Ill.

WILLIAM H. PFAU is the new secretary of the Elizabeth, N. J., Chamber of Commerce, succeeding Vance C Roberts.

G. A. PICKENS is the new secretary of the Maryville, Mo., Commercial Club, succeeding E. M. Claypool.

JAMES H. POUND has been elected secretary of the Benton Harbor, Mich., Chamber of Commerce, succeeding W. G. Brady, who resigned to enter the military service.

CAPT. JARVIS B. PRICE has been elected general manager of the Wheeling, W. Va., Chamber of Commerce, succeeding Charles M. Ketchum.

R. E. RANSON has been elected secretary of the Henderson, N. C., Chamber of Commerce, succeeding C. W. Roberts. Mr. Ranson was formerly Superintendent of Schools.

BERLE F. SHEPARD has been elected secretary of the Edwardsport, Ind., Commercial Club.

CHARLES S. SOLLARS, formerly secretary of the Chamber of Commerce of Ogdensburg, N. Y., died on October 23 from pneumonia.

L. A. SPRAGUE has been elected secretary of the New Britain, Conn., Chamber of Commerce.

N. H. STACKPOLE has been elected secretary of the Haverhill, Mass., Chamber of Commerce, succeeding John McCarthy, who is now in France with the Knights of Columbus.

HARRY STOCK has been elected secretary of the Federation of Local Commercial Organizations, a merger of all commercial organizations in Milwaukee.

CHARLES B. WAGNER succeeds Louis Gloe as secretary of the Two Rivers, Wis., Association of Commerce.

MRS. CLIFFORD E. WHITE has been elected acting secretary of the Moline, Ill., Commercial Club, succeeding M. J. Duryea.

W. A. WILEY has resigned the secretaryship of the Business Men's Association of Galesburg, Ill.

H. G. WILSON has resigned his position as traffic commissioner of the Toledo, Ohio, Commerce Club. He is succeeded by L. G. Macomber, of Toledo.

HAROLD V. WILSON has been elected secretary of the Lewiston, Me., Chamber of Commerce, to succeed John W. Rhines.

ADDISON L. WINSHIP has resigned the secretaryship of the Boston, Mass., City Club, having been elected a vice-president of the National Shawmut Bank of Boston. He is succeeded by Lloyd B. Hayes, formerly in charge of the Bureau of Investigation of the Boston Chamber of Commerce.

CLIFTON H. WOOD, secretary of the Leominster, Mass., Chamber of Commerce, has been given a six-months' leave of absence, to engage in the overseas service of the Y. M. C. A. E. H. Nutting is serving as acting secretary during his absence.

When Performance Counts

The quality of motor fire apparatus can not be judged by performance under ideal conditions. It is reliable performance under the exacting drive of actual service that has put the stamp of superiority on American-LaFrance motor fire apparatus.



American-LaFrance Type 31 Tractor attached to Aerial at Norfolk, Va. This tractor was taken to quarters, where, as soon as ice had melted, it was inspected, found to be in perfect condition, and immediately placed in service.

AMERICAN LaFRANCE ability to meet service requirements unfailingly is the result of our long experience as builders of fire apparatus; an experience that finds expression in the proved excellence of our design and the quality of our construction. The name American-LaFrance has come to stand for extraordinary performance.

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The City's Legal Responsibilities and Powers

A Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

For special assistance in ascertaining the law, statutory or judicial, on any legal question relating to municipalities, address Legal Department, THE AMERICAN CITY, *Tribune Building, New York City.*

Validity of Municipal Notes

Notes given by defendant municipality, ostensibly to cover extra work, attorneys' fees, etc., on the installation of a light and water plant but in reality to cover one per cent interest in addition to the five per cent interest which was provided for in issues of light and water bonds, were not rendered invalid as involving an attempt to indirectly allow six per cent interest on the bonds, where the law permitted the issuance of six per cent bonds. The fact that the municipal authorities may have attempted to evade an interest limitation not existing in the law did not make the transaction unlawful. (Alabama Supreme Court, J. B. McCrary vs. Town of Brantley, 79 Southern Reporter, 602.)

✣ ✣

Void Street Improvement Assessments

Land owned by a state university was not subject to assessment on account of a street improvement assessment, where the land was largely occupied by college buildings, and where grounds not actually used for educational purposes were not separable from the campus without impairing its use as a whole. Nor will a local assessment be sustained where it is so excessively disproportionate to the value of the property assessed as to amount to confiscation of such property. A property owner is not precluded from resisting foreclosure of an invalid assessment lien thru having failed to protest against the assessment before the city council, nor thru having remained silent while the improvement was being constructed. (California District Court of Appeal, First District; Raisch vs. Regents of University of California; 174 Pacific Reporter, 943.)

City Attorney's Conflicting Duties

A contract retaining the services of an attorney was invalid where it contemplated employment to defend his client under the state law in a criminal proceeding involving a transaction as to which it was the attorney's duty to prosecute under the ordinances of the city of which he was city attorney. "The rule is rigid and designed not alone to prevent the dishonest practitioner from fraudulent conduct, but as well to preclude the honest practitioner from putting himself in a position where he may be required to choose between conflicting duties, or be led to attempt to reconcile conflicting interests, rather than to enforce to their fullest extent the rights of the interest which he should alone represent." (South Dakota Supreme Court, Hosford vs. Eno, 168 Northwestern Reporter, 764.)

✣ ✣

Void Traffic Ordinance

An ordinance of the city of St. Louis declared it to be a misdemeanor to violate the following regulation: "Drivers must at all times comply with any direction by voice or hand of any member of the police force, as to stopping, starting, approaching or departing from any place; the manner of taking up or setting down passengers or loading or unloading goods in any place." This ordinance is declared by the Missouri Supreme Court to be void as giving police officers unrestrained power. (City of St. Louis vs. Allen, 204 Southwestern Reporter, 1083.) The Court says:

"In Richmond vs. Dudley, 129 Ind. 112, 28 N. E. 312, 13 L. R. A. 587, 28 Am. St. Rep. 180, it was held that city ordinances must specify rules and conditions to be observed in the conduct of business, and must allow all citizens the same privileges under those rules, and must not empower an officer to arbitrarily



Federal Electric Fire Siren

That Weird Penetrating Screech Brings Men Out Quick

More men on to start from the Fire House. Every man of the force awake and "on job." Hundreds of cities have increased the efficiency of their fire departments by install Federal Electric Fire Sirens. Their distinctive, far reaching note means FIRE to eve one, and everycne hears it, night or day, for miles around.

Please Send me list of towns using Federal Sirens and all information.

Sounds instantly at the touch of the switch from any desired points. Cost for curr consumed averages $1.50 per year—no other maintenance expense. Send coupon for full particulars.

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Branches in All Large Cities

UNITED STATES RUBBER COMPANY AND ASSOCIATED COMPANIES — US RUBBER SYSTEM

United States Truck Tires

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SOLID TRUCK TIRES

Loper Fire Alarm Co.

STONINGTON, CONN.

Manufacturers of

Compressed Air Fire Whistles

Whistle Blowers

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Etc., Etc.

Estimates Cheerfully Given

Four-Wheel Drive Aerial Ladder Truck

Pneumatic Air Hoist

Automatic Ladder Lock

One man puts the ladders where you want them. No More Cranking.

Write for free booklet and list of users



COUPLE-GEAR FREIGHT-WHEEL CO., 525 Buchanan Ave., GRAND RAPIDS, MICH.

discriminate between individuals in that respect. * * *

"The ordinance here involved puts the citizen in the arbitrary power of the officer, regardless of the circumstances of the case. Its invalidity is so glaring that the respondent has not cited any authority to uphold it. * * * In our opinion the ordinance in question is subject to the objection that it may deprive persons of the equal protection of the laws."

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Municipal Health Regulations

Notwithstanding special constitutional provision for a state board of health, cities have power to enact police regulations for the preservation of the morals and health of their inhabitants, and to provide for health officers, except as specially limited by law. The ordinance of the city of Seattle, providing for the detention and quarantine of persons having contagious or infectious disease, is not invalid as conflicting with statutory provisions for a state health department. (Washington Supreme Court, State ex rel. McBride vs. Superior Court of King County, 174 Pacific Reporter, 973.)

✣ ✣

Local Improvement Benefits

Real estate abutting upon a street may be assessed for improvement of the street if benefited generally thru being made more suitable as a manufacturing or mercantile site, altho at the time of the assessment the land may be used for some special purpose not aided by the improvement. Hence, land used for a slag dump by a mining company was properly assessed, if benefited generally, altho the improvement of an abutting street would not enhance the value of the property for dump purposes. (Alabama Supreme Court, Sloss-Sheffield Steel & Iron Co., 78 Southern Reporters, 896.)

✣ ✣

Street Improvement Taxes

Under the statutes of Alabama, the city of Birmingham was empowered to adopt an ordinance requiring male inhabitants between 21 and 45 years of age either to pay an annual street tax of $5, or to work six days on the streets. And further provision of the ordinance prescribing a fine for noncompliance with the requirement is not invalid as providing for imprisonment for debt, nor as providing a method of collecting taxes not countenanced by state law. (Alabama Supreme Court, Ex parte City of Birmingham, 79 Southern Reporter, 113.)

Acquiring Water-Works in South Carolina

The provisions of the South Carolina constitution which authorize cities to acquire water-works are self-executing. The right of a municipality to condemn an existing plant will not be denied on the mere ground that persons outside the city limits who have been previously served by the plant under contract with the private owner may lose the right to service under municipal ownership. A law providing for condemnation of a public utility, or for issuance of bonds to acquire one, on a majority vote of the electors is not to be regarded as requiring an affirmative vote by a majority of all qualified electors, as distinguished from those voting, excepting as such requirement is made manifest by the law. Ordinarily, electors not voting are presumed to acquiesce in the determination reached by the majority of those voting. Under the South Carolina constitution, a majority of votes actually cast is sufficient to authorize acquisition of a municipal water plant, and issuance of bonds for that purpose. (South Carolina Supreme Court, Paris Mountain Water Co. vs. City of Greenville, 96 Southeastern Reporter, 545.)

✣ ✣

An Invalid Fire Ordinance

A special charter provision empowering a city to "enact ordinances for the prevention and extinguishment of fires, * * * prescribe fire limits and the character of building that may be constructed *within the same*, and regulating the character and extent of repairs that may be made to or upon any buildings *within such limits*," gives no authority for the adoption of an ordinance relating to the repair of buildings beyond the fire limits, altho within the city limits. Hence, a warrant charging an ordinance violation by "covering a building within the city limits" is void, and accused is entitled to discharge under a writ of habeas corpus. Any conflict between a statute applicable to cities generally and a law of special application on a given subject must be resolved by giving effect to the latter. And any doubt as to the power of a municipality to adopt a regulatory ordinance must be resolved against the power. (Florida Supreme Court, Ex parte Davidson, 79 Southern Reporter, 727.)

Redeem Your Cracked Fire Hose

We can take out the inner jacket and lining and draw into the outside jacket a single hose lined with

BI-LATERAL CONSTRUCTION

Your old couplings can be used and it will save you approximately 40c. per foot.

Write for further information

BI-LATERAL FIRE HOSE CO.
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Dayton Airless Tires

GUARANTEED 2½ YEARS

Made exclusively for Fire Department use.

Ride like Pneumatics
No Punctures
No Blowouts

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FABRIC FIRE HOSE

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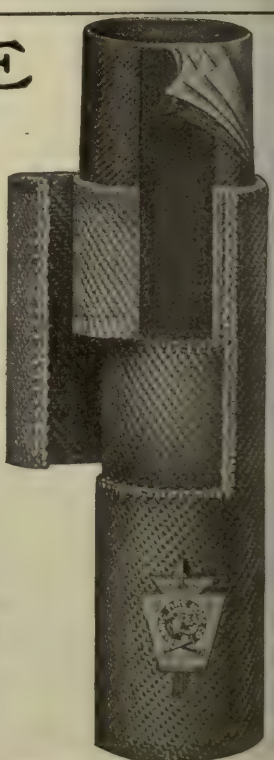
The lining is of fine Para Gum, hand made, four calendered, smooth bore or lap-jointed

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Extending Municipal Cemeteries

A clause in a city's special charter permitting it to acquire grounds outside the municipal limits for cemetery purposes does not limit its right to acquire land for such purposes within the city limits, under a statute applicable to cities in general. Plaintiff, having purchased a tract of land near an established cemetery and established a home thereon, was bound to foresee the probability of a cemetery extension being made, and is not entitled to enjoin such extension on the ground of possible injury to his well. He is, however, entitled to an award of damages for any actual injury done his property. (Oklahoma Supreme Court, Purdy vs. City of Tulsa, 174 Pacific Reporter, 759.)

✣ ✣

Invalid Street Vacation Proceeding

Without charter authority therefor, defendant city passed an ordinance declaring that a strip ten feet wide on each side of a certain street should be "vacated for the purpose of improving the appearance and breadth of said street and that the said ten feet be and the same is hereby dedicated to the adjoining lot owners." But there was a proviso against the erection of structures, excepting certain fencing, within these strips. Held, that the ordinance granted but a mere revocable permit to the abutting property owners and did not preclude the city from exercising further control over the strips as constituting parts of the street. (Oregon Supreme Court, Bernitt vs. City of Marshfield, 174 Pacific Reporter, 1153.)

✣ ✣

Invading Flowage Rights

When a city so grades a street that obstruction of a natural watercourse injures abutting property by damming back water, the city is liable for damages. Such injury constitutes a taking of private property for public use, within the meaning of the constitutional guaranty against such taking without compensation. And where a city's obstruction of drainage under such circumstances necessitates the raising of an abutting building, the city is liable for the expense of such raising, as an element of the property owner's damage. (California District Court of Appeal, Third District; Weisshand vs. City of Petaluma; 174 Pacific Reporter, 955.)

Mill-Races in Public Streets

Where a mill-race was constructed in a county road without legal authority, and the road afterwards became one of the streets of an incorporated town, the municipal authorities were empowered to adopt an ordinance requiring the owner of the mill-race to cover that portion of it passing along the street. "The use of all property whatever is subject to the general police power of the state, to be exercised either directly or thru subordinate agencies of the government to whom the state may intrust the exercise of that prerogative." (Oregon Supreme Court, Town of Gaston vs. Thompson, 174 Pacific Reporter, 717.)

✣ ✣

Overhead Railroad Crossings

Under the statutes of South Carolina, a city is liable, jointly with a railroad company, for fatal injury to a man riding on the top of a highly loaded vehicle on his being crushed between the lower timbers of a trestle which crossed a street of the city, where it appears that the city and the railway company were guilty of joint negligence in failing to provide reasonably sufficient clearance under the trestle, and that the injured man was not guilty of contributory negligence. (South Carolina Supreme Court, Brown vs. Southern Railway Co., 96 Southeastern Reporter, 701.)

✣ ✣

Street Improvement Proceedings

Under a statute authorizing the naming of streets in a resolution of intention to improve according to the names whereby they are commonly known, a resolution is not defective for failure to give the official names of streets, if the statute is followed. Nor will uncertainty in the specification of particulars concerning the improvement in the resolution vitiate the proceedings where the particulars appear in plans and specifications accompanying the resolution. And failure to give notice of a hearing on protests against a proposed change of street grade did not affect the validity of the proceedings where all protestants appeared in person or by representative at the hearing and were heard on their objections. (California District Court of Appeal, First District; Federal Construction Co. vs. Kneese, 174 Pacific Reporter, 694.)

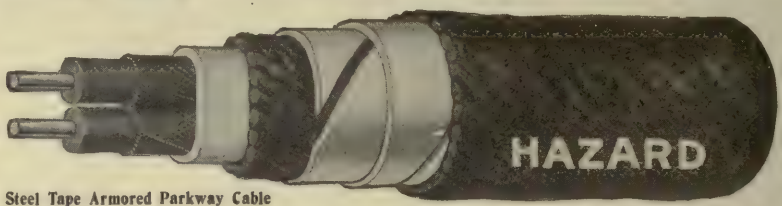
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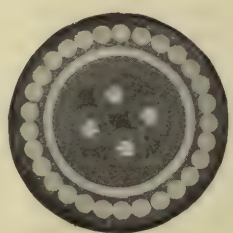
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Precautions Against Freezing of Fire Appliances

A WARNING is sent out by the National Fire Protection Association to the effect that unless extreme vigilance is exercised the very best installation of fire appliances may suffer temporary disablement from frost. Automatic sprinkler systems, hydrants and all appliances using water for fire extinguishment naturally require special care and attention in winter. The following precautions should be taken; inspections being thoro, with nothing taken for granted:

1. Ascertain if all portions of buildings are properly heated at all times to prevent freezing in any of the sprinkler pipes, particular attention being given to exposed places, such as hallways, entries, stair towers, under sidewalks, show windows, shipping rooms, attics, roof monitors and skylights.

2. Examine tanks and all pipes, fittings and valves, whether for steam heating, general water service, or fire protection. *See that none is frozen* or has been frozen, and that they are *all in operative condition*, and where there is any liability of freezing, provide the necessary protection. All metal work supporting tanks, also tank hoops, should be thoroly cleaned from rust and painted.

3. Examine carefully and provide suitable boxing around any pipe lines which may be in an exposed location (between ground and first floor, between buildings, or near windows, doors, etc.). Make frequent tests during the winter of such sprinkler systems in order to make sure the piping is not frozen.

4. Ascertain whether sprinkler dry valves are in working order, not leaking, and piping thoroly drained; whether alarm connection and gong are in order; whether air pumps can be depended on for the winter.

NOTE.—Do not overlook low points on dry system not controlled by main drain. Blow low points out occasionally to free from condensation.

5. See that *all valves are open that should be* open, and try water outlets to ascertain if all pipes are free and ready for service.

6. See that *extra sprinklers* are on hand in case of need to replace frozen or melted heads.

7. Be sure that engineer or supervising employe is fully posted as to the purpose and intention of every valve and pipe.

8. Try pumps and see that they are in proper working order.

9. Test all the *hydrants* and *indicator posts*, and see that they *drain properly*.

10. Examine inside stand-pipes and connections.

11. *Instruct the night watchman* thoroly in the use of all fire apparatus and the operation of all valves.

12. Examine the end of suction pipe to see that leaves or other refuse matter have not clogged up the holes in the strainer. The capacity of the pump may be greatly reduced by this defect.

13. Take measures to prevent freezing of water in casks and pails in cold buildings.

14. Empty and recharge chemical extinguishers to insure their being in perfect working order.

A thoro examination should be made of the entire heating system before putting it into service. All heating pipes should be carefully brushed down, and where piping is located along walls, any rubbish or litter which may have accumulated should be removed and pipes kept free from dangerous contact with walls, partitions, etc.

When it becomes necessary to close a sprinkler valve during working hours, a competent man should be stationed at the valve, so that the water can be turned on immediately in case a fire occurs.

When necessary to make changes in sprinkler system, extra care should be taken to have the least possible portion of the equipment out of commission at one time.

Whenever it is necessary to shut water off sprinklers, or in any way modify the fire protection, the inspection department having jurisdiction should be first notified.

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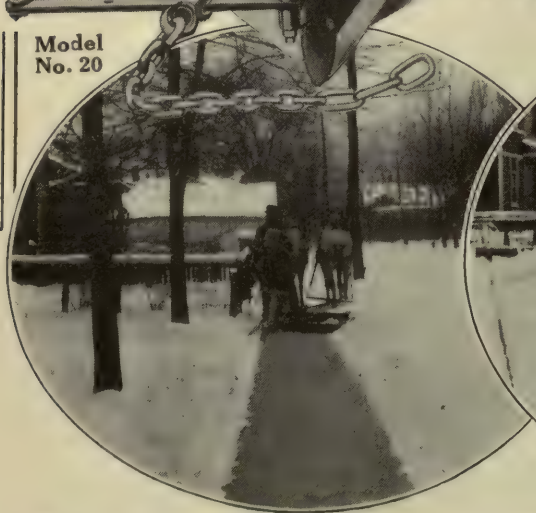


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Municipal and Civic Publications

FRIEDMAN, ELISHA M., Editor.

American Problems of Reconstruction. A National Symposium on the Economic and Financial Aspects. xxv 471 pp. **$4.15.**

In the Foreword to this volume, Franklin K. Lane, Secretary of the Interior, sounds a warning against the too easy shifting of responsibility for public affairs, the tendency to call in a body of experts who, ere we know, become a bureaucracy. We are ready to extend and broaden our activities but not to lose control of them. "We shall build anew for a broader democracy in which men will learn more perfectly to work together, not for the making of a great state, but, on the contrary, for the making of more self-owned and growing individuals."

With this as a goal, Mr. Friedman has gathered the views of a notable group of twenty-six financiers, engineers, economists and statisticians such as Irving Fisher, Charles M. Schwab, Frank A. Vanderlip, Edwin R. A. Seligman, Emory R. Johnson, George W. Perkins and Frederick A. Cleveland. Their contributions are grouped under four heads,—a perspective of the problem, efficiency in production, adjustments in trade and finance, and programs monetary and fiscal. Each of these major topics is further subdivided into its constituent parts, which are treated by the contributors from five angles:

1. What are the temporary effects of the war?
2. How may readjustments to peace conditions be facilitated?
3. What are the permanent effects of the war?
4. What changes in our national life must result therefrom?
5. What should be our economic policy?

This collection of pointed articles will act as a powerful stimulant to thought, for no one can read the contributions of such a group of able thinkers without a quickened sense of the breadth of the problems upon the wise solution of which so much of our future happiness depends.

NEW TOWNSMEN.

New Towns After the War. An Argument for Garden Cities. 84 pp. **$ .30.**

Except for the governmental development of a few munition areas, the building of houses in England practically stopped during the war. This little volume, prepared by the National Garden Cities Committee, points out that in consequence overcrowding has reached an intolerable point and that with the cessation of war the building industry must set to work to make up the shortage. Here, then, is the opportunity for a national program in the building of which industry, labor, educators and social workers may share. The statement of the problem discusses the inadequacy of town planning alone, the economic defects characteristic of town and country, the migration of industry to large centers because of the lack of well-equipped small towns, the over-extension of cities thru garden suburbs and slum areas, and the defects of the after-war housing schemes promulgated by the local government board and by housing and town-planning societies. "None of these schemes go to the root of the matter.....the most that can be said of them is that they are better than existing conditions, ...but all such conditions will aggravate a problem that sooner or later must be solved."

The solution set forth includes 1,000,000 houses in five years, to be built with the aid of national funds, along garden city lines, as distinct from garden suburbs. Ebenezer Howard's great experiment at Letchworth, tho applied as to details of house design and planning, is still little understood as to principles,—a practical marriage of town and country, a corporate unit combining industry and agriculture, with full social development, and so organized as to insure healthy community life. The program, based upon the success of the Letchworth experiment, calls for the building of a hundred garden cities, under state leadership and with the aid of government funds, and the conservation of the land values thus created for the whole community. The cost is estimated at $1,500,000,000, "a couple of months of war, or three Panama Canals." This would be used not only to provide the groundwork and the public services of the towns, but to supplement private capital in providing houses and factories, theaters and churches. The program calls for the curtailment and gradual elimination of slum areas in the larger cities. Daring? Perhaps, but who will withhold his tribute to the courage of these Englishmen, who have dared to preach the truth as they see it, not only of the housing question but of the whole future industrial and agricultural development of the British people. No American student of after-war problems should fail to read this courageous little volume.

COOKE, MORRIS LLEWELLYN, Consulting Engineer, former Director of Public Works, Philadelphia, Pa.

Our Cities Awake. xxiii + 351 pp. 119 illustrations. **$2.65.**

What shall we do with the fruits of victory? We have all been so engrossed in the greatest war in history, that we have put aside plans for the future of our cities. Now that victory is ours, let us see what needs to be done. Mr. Cooke out of the fund of his experience as a city executive has given us some very practical hints as to the mechanics of organization thru which the city must function. But he deals with the ideals of city government as well as the mechanics of it, for he shows that the mechanism must be inspired with ideals, just as idealism must be restrained by practical considerations, or, as Secretary Baker puts it in his foreword: "The mere business man makes a hard and lifeless city government. The mere idealist is likely to make a romantic failure. After all, the business of city government is the business of community coöperation." Mr. Cooke's whole volume is filled with passages indicating his recognition of the problem of municipal administration as a human problem rather than one of mere efficiency. His last two chapters, "Something More Than a Voter" and "A Glimpse of Singing Cities," illustrate this phase particularly well.

PIERSON, ARTHUR N., Chairman of the Commission for the Survey of Municipal Financing of New Jersey.

Analysis of the Laws Affecting Municipal and County Finances and Taxation. 124 pp.

This report by the author of the laws in question sets forth in convenient form the principal features of the recent legislation affecting municipal finances in the state of New Jersey, their purpose, the plan of accounting, and the operations required of municipalities. The laws discussed cover the budget, general taxes, tax sales, income bank stock, franchise, district, first and second class railroad property taxes, taxes for state roads and schools, provisions for annual audit, registry of auditors, fiscal year, sinking funds, financial statements, the department of municipal accounts, floating indebtedness, filing procedure for bond issues, the bond act, city and country school district bonds, and temporary financing for school purposes.

This volume, published by the Commission for the Survey of Municipal Financing of New Jersey, tho of primary interest to residents of that state, has much in it of value to students of municipal finance elsewhere. (Apply to the Commission, Trenton, N. J.)

JONES, HENRY WARE.

Safe and Unsafe Democracy. xiii + 500 pp. **$2.20.**

"Democracy," says the author, "is that system of Public Polity under which The Will of The People decides all questions connected with establishing and administering Government; under which The People exercise the Power to Govern, and continue in the control of its exercises,.....Democracies are based upon convic-

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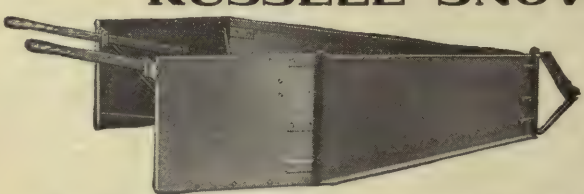
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ns concerning freedom, liberty, equality, justice, etc., defined by the people, and when free from opportuni- s to misuse the Power to Govern are reasonably safe r the people to use. Any system wherein generalities ke the place of clear definitions and defects in ad- nistrative law prevent the people from maintaining eir ordained conditions of existence is unsafe for any mmonwealth to use." This is the thesis of Mr. Jones' tire work. His object is to set forth the fundamental sity of the partisan party system of administration now use, which he characterizes as an organized inter- diary producing an indirect control over the exercise political authority, not intended by the original design our governments and in conflict with the best interest the state. The author denies that our political parties e such in the true sense of that term, and that the thods of our present party system and the action taken der it regardless of party are radically and *necessarily* ng. The author's plan is, briefly:

1. To set forth in general terms the intent of the original governmental agreements of the American commonwealths.
2. To show how and why the commonwealths failed to put these agreements into effective operation.
3. To show how partisan parties have taken advantage of these failures.
4. To show what is necessary to put the original intent of the agreements into operation.

MITH, JOHN F., Professor of Social Science, Bera College Academy.

Our Neighborhood. Illustrated. xi + 202 pp. $.80

The purpose of this book is to direct the attention of untry boys and girls to some of the definite things ich they will have to do in later years as members of community. It is primarily a text-book, but others be- les children can derive profit from reading it, as it es up such fundamental aspects of country life as good ads, playgrounds, courts, taxes, game laws, community orals, prevention of disease, manual training, waste on e farm, and the government of the community.

AROT, HELEN.

Creative Impulse in Industry. A Proposition for Educators. 1918. xxii + 146 pp. $1.60

To the busy executive who has been striving to secure iciency in his plant or office thru the use of accepted devices, this book should serve as a welcome stimulant, for it deals with fundamentals and not with surface indications. Scientific managers have not always been scientific enough in stimulating the reasoning power of the workmen. The treatment of the problem is divided into four parts: the study of the creative impulse in industry, that is, the joy of workmanship; the American way; the German way; and a proposal for the development of educational experiment shops in which young people could become acquainted with the technical problems of manufacture and give play to their individual initiative in the solution of industrial problems on a small scale or in the development of new designs or methods of workmanship.

AUSTIN, MARY.

The Young Woman Citizen. 186 pp. $1.35.

With the enfranchisement of women and their participation in public affairs has come the need of a compact analysis of the fundamental problems they will be called upon to face and to assist in solving. Mrs. Austin succeeds admirably in providing some of the necessary guideposts for a working philosophy of citizenship. She discusses the significance of woman's new position, its relation to group activity, social direction and civic consciousness, art, the admission of women to political parties as workers, the essence of nationalism, the ever-present problem of evolution vs. revolution, the role of women workers and the waste of woman power.

A notable feature of the book is an excellent bibliography of subjects related to citizenship and the development of world democracy.

ZIEGLER, SAMUEL H., Teacher of History and Civics, West Philadelphia High School, and JAQUETTE, HELEN, Teacher of History and Civics, Frankford High School, West Philadelphia.

Our Community. Illustrated. xiii + 240 pp. $.90

Like its counterpart above, this book is primarily a text-book, yet it gives in compact form the essential relationship between the community and the citizen. It discusses his health, education, recreation, the protection of his life and property, the elements of civic beauty, of inter-communication, transportation, correction, and the duties of the voter. It ends with a discussion of city, state and national government, their methods of finance and a brief statement of the part played by volunteer agencies in civic life.

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ransit Problems for Bethlehem, Pa., and Vicinity.

comprehensive report prepared by Delos F. Wilcox, .D., Consulting Franchise and Public Utility Expert, r the Committee on Improved Trolley Facilities of the thlehem Chamber of Commerce, presenting a detailed alysis of the transit problems for Bethlehem, Pa., and inity, with recommendations for their solution. July, 18. 225 pages. Maps, tables, diagrams, graphs. (Apply the Bethlehem Chamber of Commerce.)

obilizing the Rural Community.

illustrated bulletin presenting a comprehensive work- plan for the fullest possible development of the rural mmunity by bringing into coöperation all the existing al organizations in the community. The bulletin pre- nts a thoroly tried plan that is producing results in a mber of Massachusetts townships. It is intended to be ed as a handbook by practical people who want definite sults. (Apply to William D. Hurd, Extension Service, e Massachusetts Agricultural College, Amherst, Mass.)

peration of Sewage Works in Iowa.

is pamphlet is a critical survey of sewage systems in wa, including discussions of grit chambers, septic and hoff tanks, sludge beds, siphon chambers and inter- ttent sand filter beds. To those who contemplate build- g sewage plants or to those who have sewage plants der their supervision this pamphlet should prove of lue. 24 pages. 1918. Diagrams and illustrations. (Ap- y to J. H. Dunlap, Associate Professor of Hydraulics d Sanitary Engineering, State University of Iowa, wa City, Ia.)

Co-partnership Housing in England.

An 8-page paper prepared on behalf of the Committee on New Industrial Towns, by Herbert S. Swan, Executive Secretary of the Zoning Committee, New York City. Describes the operation of a co-partnership tenant society, which consists of a group of tenant members and outside investors who develop a tract of land with buildings in the interest of those who are to live in the houses. (Apply to the Committee on New Industrial Towns, 381 Fourth Avenue, New York City.)

Smoke Regulation.

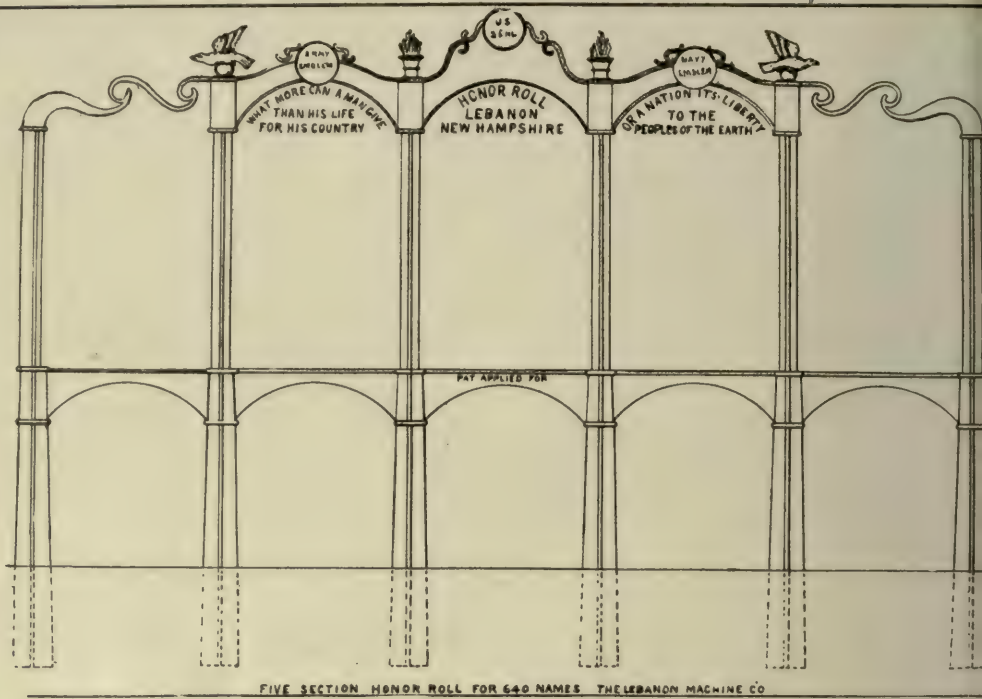
Compiled by Daniel Maloney, Smoke Inspector, and issued by the Department of Parks and Public Property, Newark, N. J. An excellent booklet of 78 pages in which are contained detailed instructions and drawings showing the best methods of getting the maximum energy out of fuel in various types of furnaces. (Apply to Department of Parks and Public Property, Newark, N. J.)

The Industrial Village.

By John Nolan, September, 1918. 22 pp. Illustrated. A compact analysis of the problems to be considered and the steps to be taken in planning a complete community development. No. 50 of the National Housing Association Publications, 105 East 22d Street, New York City. Price 10 cents.

References on Community Centers.

The Library of Congress has compiled a list of references on community centers, their organization and application to war work. Eight typewritten pages of the names and authors of books and pamphlets available on the subject. (Apply to the Librarian of Congress, Washington, D. C.)



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WHEN THE BOYS COME HOME

Many communities have honored their patriots who have enlisted in the present world wa by placing their names on a wooden tablet or honor roll. The idea of an honor roll is a splendi one and the appearance of that new and beautiful design freshly painted is most pleasing whe first erected—but when the boys come home and see for the first time the more or less dilapidate remains of that old wooden sign, what will be their opinion? If our boys are to return all at onc we might repaint it so that it will look fresh and new. Will the boys return all at once? Som never—and then of course we expect to put up a suitable memorial commensurate with thei sacrifice at some later date. You know the rest without our repeating to you the usual communit experience.

This present day is the time to do it in correct form, not some other day, so let the apprecia tion be expressed right now in ***permanent*** form. Do it ***now*** and do it ***right.*** In so doing you wi have added untold value to your historical records. Done at the time and done permanentl is the sure way.

The Lebanon Permanent Service Honor Roll is made expressly so as to cover not only the pre sent day conditions but also the future. All parts are inter-changeable and should the Hono Roll become filled with names a panel may be added to those already in place without in an way impairing the appearance of the design. New names may be added at any time or re-ar ranged as conditions require. The names may be finished in different colors to show th sacrifice of those who died in service.

Figured on the basis of capacity of Honor Roll, where one side only is used, the cost average less than two and one-half ($2.50) dollars per name, and where both sides are available but on dollar and seventy-five cents per name, a very, very small item per individual for a town to spen to show its appreciation in a most beautiful and permanent manner, and which will be at onc recognized WHEN THE BOYS COME HOME."

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News for Boards of Public Works, Engineers, Contractors, Purchasing Agents and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

An Electric Fire Whistle

The question of a general fire alarm has long been a serious one in smaller cities where a volunteer fire department is employed. The old gong has not always proved efficient. In a paper presented at the annual convention of the League of Wisconsin Municipalities, E. A. Lambert, Manager of the Federal Sign System, re-



FIRE SIREN ON TOWER ERECTED ON A FLAT-ROOF BUILDING

called a serious fire in a city where the Fire Chief considered that the loss was due to an inadequate fire alarm. The fire occurred in the night in a wooden building and spread very rapidly. The Chief of that city is fully persuaded that the disaster could have been avoided had the firemen reached the scene in time to make their chemicals effective.

The Federal Sign System, Lake and Desplaines Streets, Chicago, has developed an electric siren to meet the needs of such communities. Under normal weather conditions and surroundings, the penetration of the double head type is claimed to be from one and one-half to two miles. By normal conditions is meant a comparatively heavy atmosphere and a 10- to 15-mile wind. Its tone value is equal to a 3-inch by 10-inch steam whistle, operating under 100 pounds of steam pressure. Nearly 500 of these sirens are now in service. The U. S. Government is now using these sirens in practically every aviation camp in this country, both Army and Navy, and London and Paris have been using them during the last three years to warn of air raids.

✣ ✣

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Stormking is a combination of non-volatile asphaltic oils interwoven with long asbestos fiber. Asphalt is conceded nature's best waterproofer, while asbestos is recognized as an indestructible mineral. The combination of the two produces a covering which is impervious to moisture and which has unusual fire-resisting qualities. The Efficiency Products Company, 36 Fulton Street, New York City, claims that Stormking will not crack nor split, run nor sag, but will retain its elasticity indefinitely.



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Stormking may be used on any kind of roof, being supplied in two forms: the liquid is primarily designed as a covering for gravel and corrugated iron roofs, and the paste is better adapted to shingle roofs. It will seal all small or large leaks. Old roofs practically beyond the stage of repair are said to be made as good as new with one coat of Stormking, and when applied in accordance with the company's instructions, it is guaranteed to give absolute satisfaction, to protect the roof from leakage and keep it watertight, for ten years.



School grounds as well as the children are fully protected by this

EXCELSIOR

Chain Link Fence

As shown here it gives complete protection from outside influence as well as keeps the children within bounds. Does not obstruct the view and allows light and air from all points.

Excelsior Chain Link Fence is made of strong steel wires, heavily galvanized, of great tensile strength. They are particularly tough for the purpose and so woven as to make an exceedingly strong, firm, and durable fabric.

The posts shown here are galvanized steel, set in concrete or concrete footings. The top rail, of course, gives rigidity and prevents sagging. This fence can neither be climbed, burned nor broken down.

Send for catalog G, which gives information concerning the Excelsior products for public grounds.

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Buffalo Municipal Equipment Co
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Patentees of Municipal Equipment

An Object Lesson on Storing Gasoline

Thru S. F. Bowser & Co., Inc., of Fort Wayne, Ind., THE AMERICAN CITY has learned of one of the frequent accidents which occur thru the improper storing of gasoline. A busy garage was out of gasoline, when one of the employes drove to a near-by oil supply station and brought back a steel drum containing about fifty gallons. The day was very hot and the drive in the sun had heated and agitated the liquid. The boys, in their hurry to fill automobiles that were waiting, instead of emptying the drum into the underground storage tank, placed it on the floor inside of the garage. When the cap was unscrewed, gas rapidly escaped and was ignited, so far as can be learned, from a forge 30 feet away in the workshop. There was a flash, followed by an explosion of the steel drum which raised the roof, almost instantly killing three people and fatally injuring five others. The garage was totally destroyed, as were also the two buildings adjoining.

This disaster could undoubtedly have been avoided had the gasoline been placed in the underground storage tank. To-day there are over a million Bowser gasoline storage outfits in use, with never a fire or explosion to their discredit. These outfits are built to conform to that measure of safety prescribed by the National Board of Fire Underwriters, and combine convenience, economy and the preservation of the quality of the gasoline.

Chicago Office Reopened by the Electro Bleaching Gas Company

The Electro Bleaching Gas Company, 18 East 41st Street, New York City, manufacturer of liquid chlorine, announces the reopening of its Chicago office. Mr. G. R. Ellis will resume his duties as representative of the company in this locality.

A New Member of the Firm of Chester & Fleming

Chester & Fleming, Hydraulic and Sanitary Engineers, Union Bank Building, Pittsburgh, Pa., announce that John F. Laboon, formerly in the employ of the company, but more lately with the Pittsburgh Filter Manufacturing Company, was made a member of the firm on August 1, 1918.



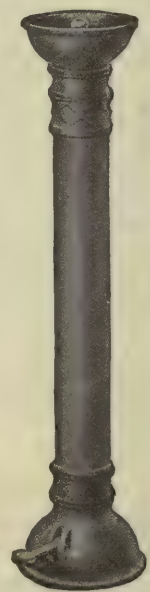
THIS GARAGE WAS WRECKED BY AN EXPLOSION CAUSED BY CARELESS HANDLING OF GASOLINE

George A. Johnson Now a Lieutenant Colonel

Major George A. Johnson, formerly consulting engineer of New York, and until recently Officer in Charge of the Water and Sewer Section of the Maintenance and Repair Division of the Construction Division of the Army, was promoted on November 6 to the rank of Lieutenant Colonel, and is now ranking officer under Colonel C. D. Hartman, Officer in Charge of the Maintenance and Repair Division. Some months ago Major Johnson closed his office in New York, and since then has been devoting his entire time to government service.

Inexpensive Drinking FOUNTAINS

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Haydenville M

Steel Tanks for Municipal Water-Works

An elevated steel water tank with a capacity of 200,000 gallons was constructed at Miles City, Mont., by the Chicago Bridge & Iron Works, of Chicago, Ill. This tank, a photograph of which is reproduced herewith, is the company's standard elliptical bottom style tank with large steel riser pipe riveted directly to the bottom of the tank. In this type of tank, sediment in the water is deposited in the bottom of the riser pipe and may be blown out into the sewer thru a wash-out valve. With the large riser pipe, the company states, it is unnecessary to have a frost-proof casing, as the large column of water does not freeze.

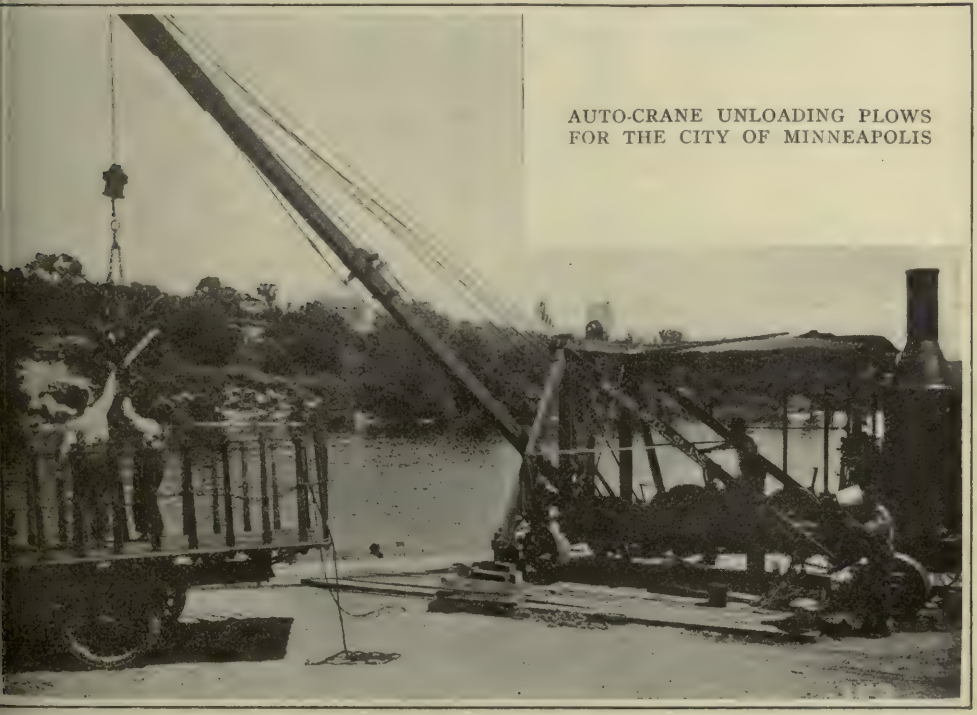


STEEL WATER TANK IN MILES CITY, MONT.

Efficiency of Auto Cranes for Municipal and Public Work

An auto crane should prove a great labor-saving device to municipalities in unloading cars and handling freight at terminals. The crane shown in the photograph is a product of the John F. Byers Machine Company, of Ravenna, Ohio, and is being used to unload plows received at Minneapolis from the Moline Plow Works, of Moline, Ill. It is interesting to note that this was the first barge of material which passed thru the Mississippi River as far as Minnneapolis, thus opening up that great body of water from the South right up to the Twin Cities.

Eighteen of these cranes are being operated by New York State along the State Barge Canal. Washington, D. C., is using one to handle the garbage cans at its garbage disposal plant, and the city of Port Huron, Mich., finds the crane very useful in



AUTO-CRANE UNLOADING PLOWS FOR THE CITY OF MINNEAPOLIS

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water-front drainage work. The auto crane should also prove valuable in general maintenance and repair work.

✣ ✣

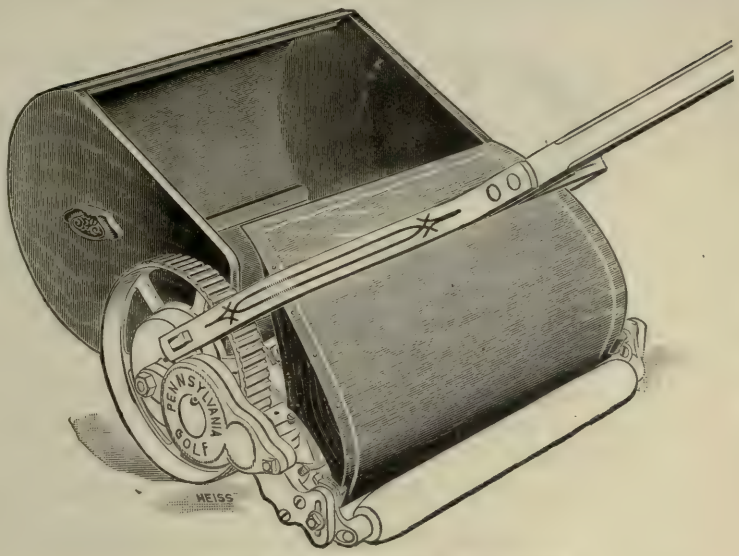
Motor Fire Equipment in a Pennsylvania Boro

The boro of Prospect Park, Moore, Pa., is now using the piece of motor equipment shown below on this page. The body is mounted on a model 70 Garford chassis, the motor being 4-cylinder, bloc, L head of 45-55 H. P., S. A. E. rating, worm drive, bevel type differential. The artillery type wheels are fitted with Swinehart tires. The Boyd rotary power pump, which is rated at 350 gallons per minute, has shown many gallons in excess of the rating. E. F. Dodson, clerk of the Council Chamber, writes that the apparatus has proved highly satisfactory.

✣ ✣

A Practical Grass Box

The Pennsylvania Lawn Mower Works of Philadelphia manufacture various kinds of implements to care for the lawn, among which is the practical grass box shown in the picture. This is constructed of sheet metal with wood ends and is composed of two parts, the box proper and the shield or deflector, to deflect the grass forward into the box. It is particularly suitable for use in municipal parks, cemeteries, golf and putting greens.

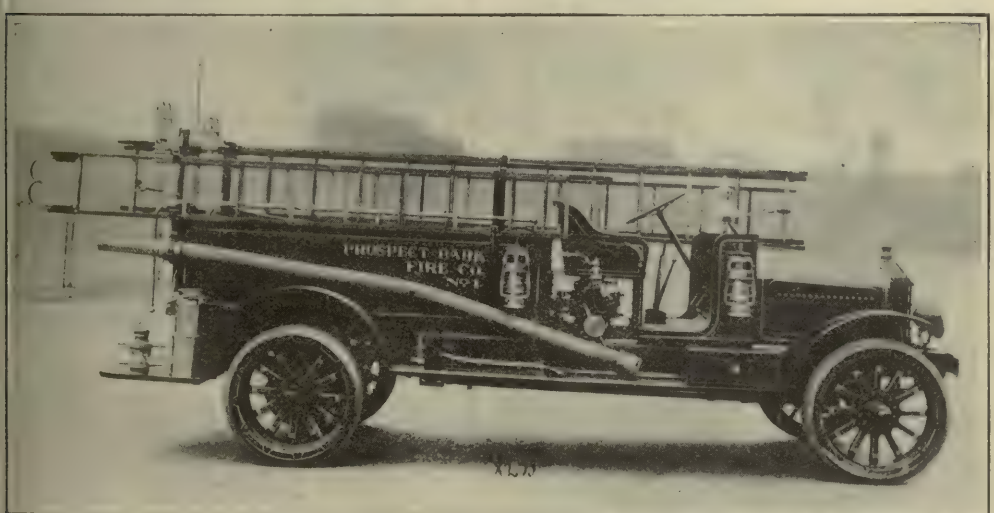


LAWN MOWER WITH GRASS BOX

✣ ✣

Personal Changes in Management

Fairbanks, Morse & Co., Chicago, announce the following changes in their management: R. H. Morse has been elected Vice-President in General Charge of Purchasing and Traffic; C. W. Pank, Vice-President in Charge of Sales of all Factory Products; W. S. Hovey, Vice-President in Charge of General Manufacturing at all factories; W. D. Miller, Vice-President and Treasurer; and F. M. Boughey, Secretary and Comptroller.



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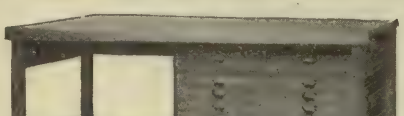
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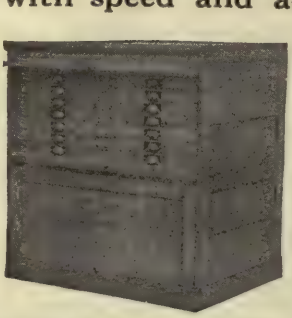
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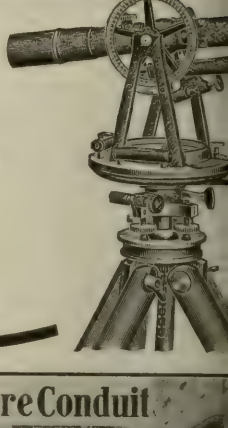
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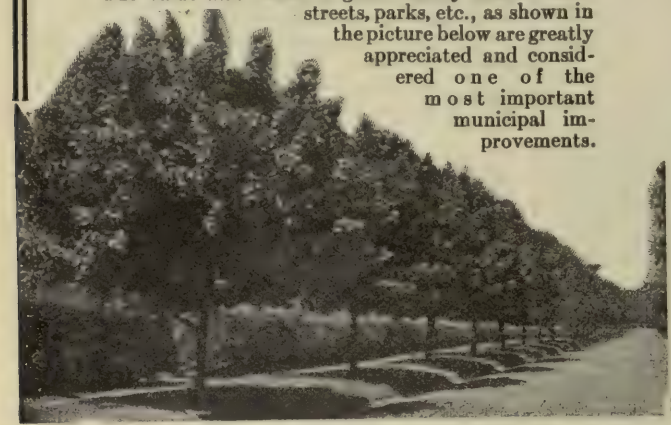
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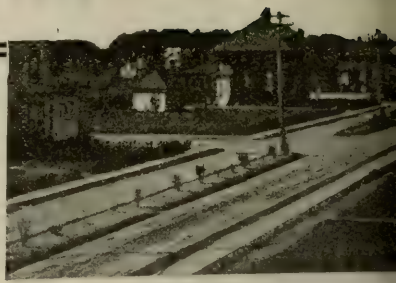
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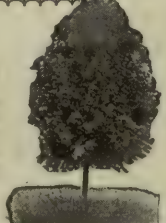
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The Municipal Buyers' Guide

A classified reference index of advertisers in this issue of The American City

The alphabetical index of advertisers which follows this list (see page 86) will give you the page numbers of all advertisements, thus enabling you to secure the full address of the advertisers, as well as other information which may be of value.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 8

Aerial Ladder Trucks.
Couple-Gear Freight-Wheel Co.

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General Electric Co.
Worthington Pump & Mach. Corp.

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Smith Co., A. P.
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Dee Co., Wm. E.
Metropolitan Paving Brick Co.
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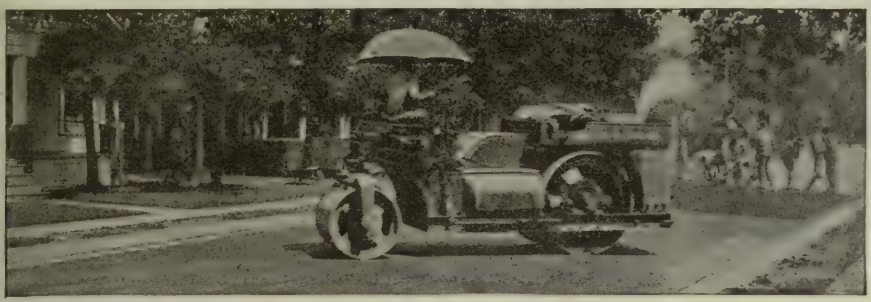
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Holzbog & Bro., Geo. H.
Studebaker
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Continued on page 78



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Austin smooth-running ability is largely the result of easy reverse and flexible range of rolling speeds—controlled instantly by the operator. Other contributing factors are low center of gravity and horizontal type of engine, which eliminate vibration.

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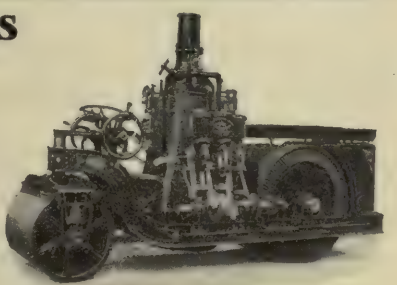
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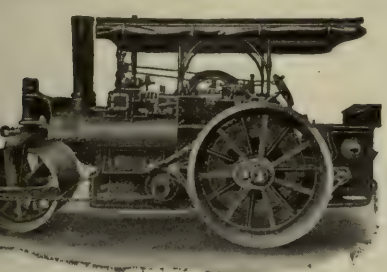
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Standard Oil Co.

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General Electric Co.

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General Electric Co.

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Dunham-Clarin Co.
Flood, Walter H.
Fuller & McClintock.
Gage, Benj. E.
Gannett, Seelye & Fleming.
Greeley, Samuel A.
Hansen, A. E.
Harding, James.
Hazen, Whipple & Fuller.
Hering, Rudolph.
Higgins, J. Wallace.
Hopkins, Charles C.
Knowles, Morris.
Ludlow, J. L.
MacKrell, Edwin A.
Mitchell, Hugh C.
Pollock & Taber
Potter, Alexander.
Potts, Clyde.
Scofield Engineering Co.
Taylor, Henry W.
Waddell & Son

Engine, Gas. (See Gas Engines.)

Exhibition Material
Educational Exhibition Co.

Expansion Joint Material.
Carey Co., Philip.

Fencing.
Barnum Iron Works, E. T.
Enterprise Iron Works.
Wright Wire Co.

Fertilizers.
Dreer, Henry A.

Filing Cabinets.
Economy Drawing Table & Mfg. Co.

Filters-Feed Water.
Pittsburgh Filter Mfg. Co.

Filtration Plants.
N. Y. Continental-Jewell Filtra. Co.
Norwood Engineering Co.
Pittsburgh Filter Mfg. Co.

Filtros for Sewage Treatment.
General Filtration Co.

Fire Alarm Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Fire Alarm Signals, Electric.
Federal Sign System

Fire Alarm Signals, Steam.
Union Water Meter Co.

Fire Alarm Systems.
Gamewell Fire Alarm Telegraph Co.
Loper Fire Alarm Co.

Fire Department Apparatus.
American-LaFrance Fire Engine Co.
Couple-Gear Freight-Wheel Co.
Garford Motor Truck Co.
Studebaker.
White Co., The.

Fire Escapes.
Barnum Iron Works, E. T.

Fire Extinguishers, Chemical.
American-LaFrance Fire Engine Co.

Fire Hose.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Co., B. F.
Republic Rubber Co.

Fire Pumps.
Worthington Pump and Machinery Corporation.

Flag Poles.
Barnum Iron Works, E. T.

Flexible Joints.
U. S. Cast Iron Pipe & Fdry. Co.

Flower Bed Guards.
Barnum Iron Works, E. T.
Wright Wire Co.

Fountains.
Barnum Iron & Wire Works, E. T.
Casey-Hedges Co.
Puro Sanitary Drinking Foun. Co.
Rundle-Spence Mfg. Co.

Furnaces, Melting.
Leadite Co.

Garbage Cans—See Cans for Ashes and Garbage.

Garbage Wagons.
Austin-Western Road Machy. Co.
Garford Motor Truck Co.
Holzbog & Bro., Geo. H.
Studebaker.
Watson Wagon Co.
White Co., The.

Gas, Chlorine.
Electro Bleaching Gas Co.

Gas Engines.
Foos Gas Engine Co.
Worthington Pump & Mach. Corp.

Gaskets.
Leadite Co.

Gas Meters.
General Electric Co.
Pittsburgh Meter Co.

Gasoline Pumping Engines.
Bond Co., Harold L.
Worthington Pump & Mach. C

Gasoline Storage Tanks.
Bowser & Co., Inc., S. F.

Gates For Parks and Cemeteries
Barnum Iron Works, E. T.
Enterprise Iron Works.
Wright Wire Co.

Gauges, Loss of Head, Rate of Fl
Simplex Valve & Meter Co.

Gauges—Surface, Reservoir Special Water Works.
Clark Co., H. W.
Simplex Valve & Meter Co.

Graders.
Austin-Western Road Machy. C
Owensboro Ditcher and Grader
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Graphite.
Dixon Crucible Co., Joseph.

Grass Seed.
Burpee Co., W. Atlee.
Dreer, Henry A.
Thorburn & Co., J. M.

Health and Amusement Devic
American Playground Device C
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Heating Kettles.
Connery & Co., Inc.

High Pressure Hydrants.
Smith Co., A. P.

Hose.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Co., B. F.
Republic Rubber Co.

House Numbers.
Baltimore Enamel & Novelty C
Buffalo Municipal Equipment C

Hydrants.
Columbian Iron Works.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Ludlow Valve Mfg. Co.
Norwood Engineering Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.
S. E. T. Valve & Hydrant Co.
Smith Co., A. P.
Wood & Co., R. D.

Indicator Posts.
Columbian Iron Works.
Flower-Stephens Mfg. Co.
Ludlow Valve Mfg. Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.

Insulating Materials.
Carey Co., Philip.
General Electric Co.

Insulated Wire and Cable.
General Electric Co.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Continued on page 80



e Can Do The Same For You!

'e are Consulting Engineers for Municipalities.
'e designed, built and operated the Cleveland Municplant. Its maximum rate is 3 cents per K. W. hour.
e represent cities in negotiations with the Utility orations.
e prepare valuations and represent cities before the e Commissions in rate cases for Electric Light, Gas, hone, Water Works and Railway Fare Cases.

Write for Printed Matter

F. W. BALLARD & CO.
Engineers
land Building Cleveland, Ohio



Every Road Needs

SOLVAY Granulated **CALCIUM CHLORIDE**

To keep it clean, sanitary and free from dust. SOLVAY is a most efficient road binder, for it works down into the body of the road aiding the natural cementing of rock and soil. This causes the road surface to pack firmly, even under heavy traffic.

SOLVAY GRANULATED CALCIUM CHLORIDE is an odorless chemical salt which does not discolor the road surface, nor will it stain or corrode. Applied dry, it absorbs moisture from the air doing away with the constant expense of sprinkling. The low cost of maintenance is also an important feature.

The application of SOLVAY requires no skilled labor nor expensive apparatus. Two applications a season will keep a road surface in excellent condition the year 'round.

If you are interested in good roads at a minimum cost write for the "Solvay Road Book" mailed free upon request.

SEMET-SOLVAY CO.
410 Milton Ave. Solvay, N.Y.

BUY WAR SAVINGS STAMPS!

ood Road Machinery for Good Roads

CRUSHERS SWEEPERS
ELEVATORS BIN-SCREENS
SCARIFIERS, ETC.

Write for interesting illustrated catalog

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ngston, N.Y. Boston Harrisburg

JAEGER CONCRETE MIXER

for paving and sidewalk work

Used by progressive municipalities and contractors.

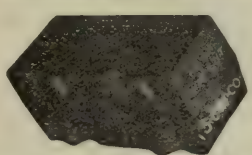
Is your town progressive?

WRITE FOR DATA

The Jaeger Machine Co.
215 West Rich Street
COLUMBUS .·. .·. .·. OHIO

UTHERN CLAY MFG. CO.

James Building
ATTANOOGA, TENN.



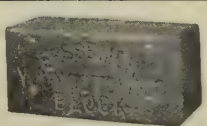
Annual Capacity:
Thirty Million Paving Blocks

Manufacturers of

WIRE-CUT-LUG BLOCKS
DUNN PATENT



Best Paving Brick Made



ne Metropolitan Paving Brick Co. **Canton, Ohio**

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 86

Jail Cells and Jail Work.
Barnum Iron Works, E. T.

Joints, Flexible.
Coldwell-Wilcox Co.

Kettles, Tar and Asphalt.
Connery & Co., Inc.

Landscape Architects.
Arnold, Sheffield A.
Arnold & Tripp.
Cole, Louis S.
Cullen, Wm. E.
Davey Tree Expert Co.
Helder, Arthur H.
Higgins, J. Wallace.

Lapidolith.
Sonneborn Sons, Inc., L.

Lawn Mowers.
Austin Western Road Machy. Co.
Pennsylvania Lawn Mower Works.
Shawnee Mower Co.

Lawn Sweepers.
Everwear Mfg. Co.
Pennsylvania Lawn Mower Co.

Lead Furnaces & Caulking Tools.
Smith, A. P.

Leadite.
Leadite Co.

Lead Wool.
United Lead Co.

Leak Finders.
Clark & Co., H. W.
Pitometer Co.

Liquid Chlorine.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Great Western Electro Chem. Co.
Hooker Electrochemical Co.
Pennsylvania Salt Co.
Wallace & Tiernan Co., Inc

Lighting Standards.
Casey-Hedges Co.
Cutter Co., George.
Electric Railway Equipment Co.

Lubricants.
Dixon Crucible Co., Joseph.

Manhole Covers.
Barnum Iron Works, E. T.
Casey-Hedges Co.
Clark Co., H. W.
Columbian Iron Works.
S. E. T. Valve & Hydrant Co.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Merry-Go-Rounds.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Metal Preservatives.
Dixon Crucible Co., Joseph.
Harrisons, Inc.

Meter Books.
Buffalo Meter Co.
Pittsburgh Meter Co.

Meter Boxes.
Buffalo Meter Co.
Casey-Hedges Co.
Clark Co., H. W.
Columbian Iron Works.
Ford Meter Box Co.
Hersey Mfg. Co.
McNutt, Lewis
Pittsburgh Meter Co.
S. E. T. Valve & Hydrant Co.

Meter Couplings.
Clark Co., H. W.
Ford Meter Box Co.
McNutt, Lewis
Pittsburgh Meter Co.

Meter Holding Devices.
Ford Meter Box Co.
McNutt, Lewis

Meter Testers.
Buffalo Meter Co.
Clark Co., H. W.
Ford Meter Box Co.
Neptune Meter Co.
Pittsburgh Meter Co.

Meters—See Water and Gas Meters.

Motor Trucks.
Couple-Gear Freight-Wheel Co.
Garford Motor Truck Co.
Studebaker.
White Co., The.

Motor Fire Apparatus—See Automobile Fire Apparatus.

Motor Truck Trailers.
Watson Wagon Co.

Nurseries.
Andorra Nurseries.
Bobbink & Atkins.
Donaldson Co.
Dreer, Henry A.
Harrison Nursery Co.
Hicks Nurseries.
Kohankie & Son, Henry.
Meehan Co., Thomas.
Riverview Nursery & Seed Co.
Smith Co., W. & T.
Storrs & Harrison Co.

Oil Tanks.
Chicago Bridge and Iron Works.
Connery & Co., Inc.

Ornamental Metal Fencing.
Barnum Iron & Wire Works, E. T.
Wright Wire Co.

Packing.
Carey Co., Philip.

Paint, Preservative.
Sonneborn Sons, Inc.
E. I. Du Pont de Nemours & Co.
Dixon Crucible Co., Joseph.

Paint Gun (Pneumatic).
Spray Engineering Co.

Park Benches.
American Playground Device C
Barnum Iron & Wire Works, E
Casey-Hedges Co.
Enterprise Iron Works.

Park and Lawn Sprinklers.
Spray Engineering Co.

Paving Inspection.
Allentown Testing Laboratories.

Paving Machinery and Tools.
Erie Machine Shops
Warren Bros. Co.

Paving Materials. (See also u
Brick and Cement.)
Carey Co., Philip.
Standard Oil Co.
Warren Bros. Co.

Paving Mixers.
Warren Bros. Co.
Worthington Pump and Machi
Corporation.

Paving Mixtures.
Standard Oil Co.

Pencils, Drafting, Office.
Dixon Crucible Co., Joseph.

Pipe.
American Cast Iron Pipe Co.
Casey-Hedges Co.
Cast Iron Pipe Pub. Bureau, R
McWane, Sec.
Central Foundry Co.
Clow & Sons, James B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry C
Lynchburg Foundry Co.
Massillon Iron & Steel Co.
U. S. Cast Iron Pipe & Foundry
Warren Fdry. & Machine Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter

Pipe Covering.
Carey & Co., Philip.

Pipe Cutters.
Smith Co., A. P.
Strickler & Bros., W. W.

Pipe Joint Compound.
Dixon Crucible Co., Joseph.

Pipe Jointing Materials.
Leadite Co.
United Lead Co.

Pipe Locators.
Clark Co., H. W.

Pipe (Riveted Steel.)
Pittsburgh-Des Moines Steel C

Pitch.
Carey Co., Philip.

Pitometers.
Pitometer Co., The.

Pito Tubes.
Simplex Valve & Meter Co.

Playground Apparatus.
American Playground Device C
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Continued on page 82

THE STANDARD METHOD of SURFACE TREATMENT



Below is a water bonded Gravel Road treated with Stanolind Paving Asphalt at 300°F., 45 pounds pressure, applied one-half gallon to the square yard by special pressure tank wagon shown in other illustration.

One application of Stanolind Paving Asphalt on Macadam and Gravel Roads has given three years' service with practically no expense. Builds more substantial surface at half the cost of light oil treatment for three years. Can be applied on roads previously treated with Road Oil.



Write today for free booklet, "Stanolind Paving Asphalt."

STANDARD OIL COMPANY
(INDIANA)

72 W. Adams Street, Chicago, Ill.

UNIFORMITY

a prime requisite of WARRENITE—The Country oad Surface, and is safeguarded by systematic testing o insure the highest standard possible in the mixture of

WARRENITE Road Surface

These tests are made by expert chemists of real au- ority.

Now in time of war county officials should not spend oney experimenting—their efforts should be directed ward a standard surfacing which has already stood the st as to motor transportation and varying climatic nditions as has

WARRENITE

Trunk line highways are necessary to relieve the over- rdened railroads of the freight congestion.

Highways should be encouraged and built at once. ever were they more needed than at the present time

BUT

ese highways should be built of a material which will ve you a well paved highway for years to come.

Insist on
WARRENITE
The Ideal Country Road Surface
All to gain—Nothing to Lose

Write today for WARRENITE circulars, specifica- ons, and form of mixture agreement available to all ntractors and learn more about this modern ideal untry road surface. **It is to your advantage.**



Warrenite, Rockrimmon Road, near Chicopee, Mass.

WARREN BROTHERS COMPANY
Executive Offices: Boston, Mass.

District Offices:

New York, N. Y. | Chicago, Ill. | Los Angeles, Cal.
San Francisco, Cal. | Portland, Ore. | Phoenix, Ariz.
Richmond, Va. | Nashville, Tenn. | Utica, N. Y.
St. Louis, Mo. | Winnipeg, Man. | Montreal, P. Q.
Toronto, Ont. | Vancouver, B. C.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 86

Poles, Combination Railway and Lighting.
Cutter Co., George.
Electric Railway Equipment Co.

Police Patrols.
White Co., The.

Police Signal Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Police Signal Systems.
Gamewell Fire Alarm Telegraph Co.

Portland Cement.
Pennsylvania Cement Co.

Powder.
DuPont de Nemours & Co., E. I.

Publishers.
Dutton & Co., E. P.
Engineering News-Record.

Pumping Machinery.
Bond Co., Harold L.
Deming Co.
Wood & Co., R. D.
Worthington Pump and Mach. Corp.
Yeomans Bros. Co.

Ramshorn Meter Holding Frame.
Ford Meter Box Co.

Repair Lids for Service Boxes.
Clark Co., H. W.

Road and Street Machinery.
Austin-Western Road Machy. Co.
Baker Mfg. Co.
Buffalo-Springfield Roller Co.
Connery & Co., Inc.
Erie Machine Shops.
Garford Motor Truck Co.
The Good Roads Machinery Co.
Littleford Bros.
Newport Culvert Co.
Owensboro Ditcher and Grader Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Universal Road Machinery Co.
Warren Bros. Co.
White Co., The.

Road Binders.
Semet-Solvay Co.
Standard Oil Co.

Road Culverts.
Casey-Hedges Co.
Good Roads Machy. Co.
Newport Culvert Co.
U. S. Cast Iron Pipe & Fdry. Co.
Wood & Co., R. D.

Road Drag and Street Scrapers.
Austin-Western Road Machy. Co.
The Good Roads Machinery Co.
Newport Culvert Co.
Rochester Can Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Road Oil.
Standard Oil Co.

Road Oilers.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Studebaker.
Universal Road Machinery Co.
White Co., The.

Road Rollers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Erie Machine Shops.
Good Roads Machinery Co.

Rock Crushers.
Austin-Western Road Machy. Co.
Good Roads Machy. Co.
Universal Road Machinery Co.
Worthington Pump & Mach. Corp.

Roofing Materials.
Carey Co., Philip.
Efficiency Products Co.

Rubber Tires.—See Tires, Rubber.

Rubbish Burners.
Barnum Iron Works, E. T.

Rust Preventing Material.
Dixon Crucible Co., Jos.
Harrisons, Inc.

Sand Spreaders.
Buffalo Municipal Equipment Co.

Sand Testing Machines.
Kolesch & Co.

Sanitary Drinking Fountains.
Barnum Iron Works.
Casey-Hedges Co.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.

Scarifiers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Good Roads Machinery Co.
Universal Road Machy. Co.

Seeds, Plants and Bulbs.
Burpee Co., W. Atlee.
Dreer, Henry A.
Hicks Nurseries.
Storrs & Harrison Co.
Thorburn & Co., J. M.

Service Boxes.
Casey-Hedges Co.
Clark Co., H. W.

Service Box Finders.
Clark Co., H. W.

Sewage Disinfection.
Electro Bleaching Gas Co.

Sewage Pumps and Ejectors.
Otterson Auto-Eductor Co.
Yeomans Bros. Co.

Sewer Buckets.
Champion Potato Machinery Co.

Sewer Castings.
Casey-Hedges Co.
Clark Co., H. W.
Dee Co., Wm. E.
Enterprise Iron Works.

Sewer Cleaning Apparatus.
Buffalo Municipal Equipment Co.
Champion Potato Machinery Co.
Turbine Sewer Machine Co.

Sewer Pipe.
Dee Co., Wm. E.

Sewer Rods.
Bond Co., Harold L.
Champion Potato Machinery Co
Turbine Sewer Machine Co.

Sewage Treatment.
General Filtration Co.

Sheer Gates.
Chapman Valve Mfg. Co.
Columbian Iron Works.
Rensselaer Valve Co.

Signs—Iron and Wire.
Barnum Iron Works, E. T.
Buffalo Municipal Equipment C
Lebanon Machine Co.
Mathews Interlocking Sign Co.
Union Iron Products Co.

Sleeves and Valves.
Flower-Stephens Mfg. Co.
Rensselaer Valve Co.

Sluice Gates and Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Columbian Iron Works.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Ludlow Valve Co.
Rensselaer Valve Co.

Smoke Stacks.
Pittsburgh-Des Moines Steel Co

Snow Cleaning Machinery.
Baker Mfg. Co.
Good Roads Machinery Co.
Newport Culvert Co.
Russell Grader Mfg. Co.
Owensboro Ditcher and Grader C

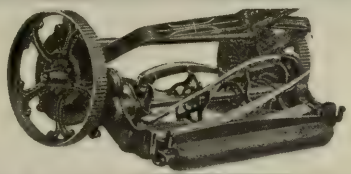
Soil Pipe (Cast Iron).
Abendroth Bros.
Alabama Pipe & Foundry Co.
American Enameling Mfg. Co.
American Foundry & Pipe Co.
Anniston Foundry Co.
Bessemer Soil Pipe Co.
Campbell Mfg. Co.
Casey-Hedges Co., The.
Central Foundry Co.
Charlotte Pipe and Foundry Co
Coosa Pipe & Foundry Co.
Crown Pipe and Foundry Co.
Gadsden Pipe Co.
Haines, Jones & Cadbury Co.
Johnson Co., J. D.
Krupp Foundry Co.
Medina Foundry Co.
National Pipe & Fdry. Co.
Reading Foundry & Supply Co
Salem Brass & Iron Mfg. Co.
Sanitary Co. of America.
Somerville Iron Works, The
Standard Foundry Co.
Superior Mfg. Co.
Union Foundry Co.
Weiskittel & Son Co., A.
Wetter Mfg. Co., H.

Spiral Riveted Pipe.
Casey-Hedges Co.

Spraying Machinery for Trees a Shrubs.
Deming Co.

Spray Nozzles.
Spray Engineering Co.

Continued on page 84



Any more work in your old mowers?

SEE if this year's mowers can't be put in shape for another season — if not, your most economical plan is to buy the high-grade, long-lived

PENNSYLVANIA
Quality
Lawn Mowers

In conserving labor and material it isn't wise to purchase inferior tools of any kind these days. "PENNSYLVANIA" is the mark of the mower that is "*quality*" throughout.

For sale by Hardware Dealers and Seedsmen

PENNSYLVANIA LAWN MOWER WORKS
JOHN BRAUN & SONS
FOUNDED 1877 PHILADELPHIA

This trade mark is on the handles of:

"Pennsylvania"
"Pennsylvania, Jr."
"Pennsylvania Golf"
"Pennsylvania Putting Greens Mower"
"Continental"
"Great American B.B."
"Shock Absorber"
"Quaker City"
"Red Cloud B. B."
"Orchid B. B."
"Daisy"
"New Belmont"
"Bellevue"
"Panama"
"Delta B. B."
"Electra"
"Pennsylvania Pony"
"Pennsylvania Horse"
"Pennsylvania Grand Horse"
"Pennsylvania Trio Horse" (86 in. cut)

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisers follows this classified list. See page 86

Standpipes.
Casey-Hedges Co.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.

Steel Plate Work.
Pittsburgh-Des Moines Steel Co.

Stokers for Power Plants.
Westinghouse Electric & Mfg. Co.

Street Cleaners Carts.
Studebaker.

Street Cleaning Machines (Motor Driven).
Elgin Sales Co.

Street Flushers.
Buffalo Municipal Equipment Co.
Garford Motor Truck Co.
Studebaker.
White Co., The.

Street Lamps—Electric.
General Electric Co.

Street Lamp Posts.
Barnum Iron Works, E. T.
Casey-Hedges Co.
Cutter Co., George.
Electric Railway Equipment Co.

Street and Road Graders.
Austin-Western Road Machy. Co.
Good Roads Machy. Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Street and Road Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Lebanon Machine Co.
Mathews Interlocking Sign Co.
Union Iron Products Co.

Street Sign Posts.
Casey-Hedges Co.
Cutter Co., George.
Lebanon Machine Co.

Street Sprinklers.
Austin-Western Road Machy. Co.
Buffalo Municipal Equipment Co.
Garford Motor Truck Co.
Studebaker.
White Co., The.

Street Sweepers.
Austin-Western Road Machy. Co.
Elgin Sales Co.
Studebaker.
Universal Road Machinery Co.

Street Trash Cans.
American Can Co.
Rochester Can Co.

Surveyors Instruments.
Buff & Buff Co.
Kolesch & Co.

Tanks, Storage for Oils and Gasoline, etc.
Bowser & Co., Inc., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pittsburgh-Des Moines Steel Co.

Tanks and Towers.
Casey-Hedges Co.
Chicago Bridge and Iron Works.
Newport Culvert Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A.

Tapping Machines.
Smith Co., A. P.

Tar & Asphalt Spreaders.
White Co., The.

Tar Kettles.
Casey-Hedges Co.
Connery & Co., Inc.
Good Roads Machinery Co.
Littleford Bros.
Warren Bros. Co.

Tar Wagons.
Casey-Hedges Co.

Testing Laboratories.
Allentown Testing Laboratory Co.

Tires, Rubber.
Dayton Rubber Mfg. Co.
Firestone Tire & Rubber Co.
Fisk Rubber Co.
Goodrich Co., B. F.
Republic Rubber Corp.
U. S. Tire Co.

Traction Engines.
Buffalo Springfield Roller Co.

Traction Trains.
Buffalo Springfield Roller Co.

Tractors.
American-La France Fire Engine Co.
Couple Gear Freight Wheel Co.
Garford Motor Truck Co.
Watson Wagon Co.
White Co., The.

Traffic Posts.
Buffalo Municipal Equipment Co.
George Cutter Co.
Lebanon Machine Co.

Traffic Regulation Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Lebanon Machine Co.
Union Iron Products Co.

Trailers.
Buffalo Springfield Roller Co.
Watson Wagon Co.

Tree and Flower Bed Guards.
Wright Wire Co.

Trench Braces.
Bond Co., Harold L.

Trench Pumps.
Bond Co., Harold L.
Deming Co.
Worthington Pump & Mach. Co.

Typewriters.
Noiseless Typewriter Co.

Vacuum Pumps.
Deming Co.
Worthington Pump & Mach. Corp.

Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Ludlow Valve Co.
Pratt & Cady Co., Inc.
Rensselaer Valve Co.
S. E. T. Valve & Hydrant Co.
Simplex Valve & Meter Co.
Smith Co., A. P.
Wood & Co., R. D.

Valves, Air.
Simplex Valve & Meter Co.

Valves, Altitude.
Simplex Valve & Meter Co.

Valve Boxes and Housings.
Casey-Hedges Co.
Clark Co., H. W.
Columbian Iron Works.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Ludlow Valve Co.
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Valve Specialties.
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Wagons and Carts.
Studebaker.
Watson Wagon Co.

Water Supply Conservation.
National Water Main Cleaning C
Pitometer Co.

Water Main Cleaning.
National Water Main Cleaning C

Water Meters.
Badger Meter Mfg. Co.
Buffalo Meter Co.
General Electric Co.
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Union Water Meter Co.
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Water Purification Chemicals.
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Water Regulators.
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Water Towers.
Casey-Hedges Co.
Chicago Bridge and Iron Works
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Water Works Specialties.
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Well Construction & Equipment
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Wood Paving.
Republic Creosoting Co.



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Write to Department C about your needs. We will send full information and testimonials from satisfied customers *whose necessities were the same as yours.*

Efficiency Products Company

~~36 Fulton St. New York City~~

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Xmas & Safety First



Now that the war is over and the destruction of life on the other side has ceased it is time for us to do what we can to prevent the unnecessary destruction of life in our own streets.

Do you appreciate how many lives are lost daily as a result of lack of traffic guidance? Would you like to help to counteract such losses of human life by making traffic safer and surer in your city? If so you will be interested in the catalog of Cutter Traffic Standards which are on duty day and night in many municipalities and are earning their cost daily in the saving of lives and preventing of accidents.

GEORGE CUTTER
····COMPANY····
413 NOTRE DAME ST.
SOUTH BEND, INDIANA

ntered as second class
Act of March 3, 187



GRAND CENTRAL TERMINAL, New York, with new 27-story Commodore Hotel on right. An average of 502 trains, 86,668 passengers and 50,000 non-passengers enter and leave this great railroad terminal in a single day

TRANSPORTATION

MOTOR VEHICLES are a vital part of Transportation, multiplying man's activities and broadening his efficiency. Their present-day utility is the result of constant improvement in tire building and may be increased or decreased according to the kind of service rendered by the tires.

THE TAXICAB that takes you to the train, the passenger car, the truck with big pneumatics for the long, speedy haul and the giant solid-tired monster for heavy duty work—all of these may be made a better investment by equipping them with Fisk Tires.

FOR SALE in 130 Branches and by Dealers Everywhere

FISK PNEUMATIC TRUCK TIRE

FISK TIRE

..... 16

ly Co., Walter A. 36

uary, 1919 TOWN AND COUNTY EDITION Vol. XX No. 2
35 Cents $3 a Year

The American City

Good Drainage
is a Prime Necessity
on all Roads
oid Troubles Like This
By Watching Your
ghway Drainage Systems



ntered as second class matter, September 11, 1914, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Published monthly by The Civic Press, Tribune Building, New York.

NOVALUX

"NOVALUX LIGHTED" is only another way of saying "*progressive city.*" Even the small towns that are Novalux lighted are a pride to their states.

Where there is Novalux lighting you will usually find everything else also modern—good paving, good sanitation, good schools, upstanding police and fire departments, inviting residential streets and a thriving business section.

City welfare is not a thing to be neglected at any time. No dollar of public moneys that is intelligently expended in the interests of public safety and welfare is wasted.

The value of modern street lighting to a town is too well known to need explanation here. But the economies of Novalux lighting are of real moment in these days, when everybody should count the cost.

For small town and metropolis—for lonely highway and principal thoroughfare—for residential and industrial sections—there are now exactly the right Novalux street lighting units to provide scientifically correct illumination most economically.

The economies of the Novalux light source—the MAZDA C Lamp—are well known to you. In addition to these are the Novalux economies of reflection and refraction—the art of utilizing *all* the light.

When you need street lighting counsel you will make no mistake by consulting the Street Lighting Specialists of a Company that has had a quarter-century experience in making everything from generator to lamp.

35-3





GENERAL ELECTRIC COMPANY

OUT IN OKLAHOMA

Thirty thousand feet—2500 bell and spigot joints—of U. S. Cast Iron Pipe—were laid over rough country—granite boulders—sharp dips of from 12 to 20 feet under water—and all without a special casting or a bend of any kind.

Such is the latest story of Cast Iron Pipe efficiency—*and the efficiency of the reliable BELL and SPIGOT Joint.*

At one point the line dipped through a lake—dropped 20 feet under water,—then rose to the shore on the other side. The lake was narrow,—we'll show you a picture of that later—so you can imagine the tremendous strain to which those joints were subjected. With that in mind just recall that only 3 joints out of 2500 showed even a slight leak. Some 2497 joints *perfect*, in spite of the rocky-road conditions almost everywhere.

Where was it? Medicine Canyon, Okla. What pipe was it? The pipe with 250 years' service record back of it—



24 inch line looking south from Dam, through Medicine Canyon.

U. S. CAST IRON PIPE

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For Literature or Special Information, Address Publicity Dept., Burlington, N. J.

HOW THEY DO IT IN OTHER PLACES

Valuable Illustrated Material, Statistics, Etc., Regarding Methods, Materials and Appliances for Public Improvement Work, Sent Free of Charge.

The AMERICAN CITY should be mentioned when writing for material. Officials who check over these items each month and write for such printed matter as interests them will find this a convenient way of keeping their information files up to date.

Charts and Maps as Used by Health Officers.

A reprint from the American Journal of Public Health bearing the above title is available for distribution among city officials interested in the use of graphic charts and maps for the presentation of municipal statistics, with particular reference to health. This article, written by Gardner T. Swarts, Jr., shows very effectively map mounts, map marking devices, the use of beads and map rings, the best selection of colors for color schemes and the use of map pins in health department work. Specific instances of the use of county and state maps with numbered tacks and colored beads and pins are shown applicable to cases of measles and typhoid fever. An interesting discussion of the use of ratio paper and the calculation of appropriation charts are shown. By means of the latter, which can easily be prepared by any municipal officer, the proportion of any appropriation remaining unexpended at any time can be readily computed graphically. This reprint may be secured by writing to the Educational Exhibition Company, 127 Custom House Street, Providence, R. I.

Trucks and Tractors.

The Dart Truck & Tractor Corporation of Waterloo, Iowa, is distributing printed matter relative to its motor truck, which is suitable for street flushing and street sprinkling, road oiling, etc.; also relative to a tractor which is especially adapted to hauling road machinery.

Spray Pumps and Water-Works Pumps.

A catalog of hand and power pumps for all uses, including spray pumps for parks, water-works pumps, and other styles of pumping machinery for general and municipal service, is being distributed by the Deming Company, Salem, Ohio.

Checking Water Waste.

Both little leaks and big leaks annoy the water-works superintendent and every municipal official who is concerned with the economical operation of the water supply system. A bulletin issued by the Simplex Valve and Meter Company, 112 North Broad Street, Philadelphia, illustrates and describes its system for determining just how much money you are losing on account of leaky faucets, poor pipe joints, etc.

Water Sterilizing Apparatus.

Water commissioners should insist on safe water and safe disposal of sewage—the elimination of water-borne disease—just as the United States Government did in the construction of its various camps. "W & T Apparatus and Uncle Sam" is the title of a circular listing some of the installations of "W & T" chlorine control equipment for water and sewage purification. This circular is distributed by Wallace & Tiernan Company, Inc., 349 Broadway, New York City.

Concrete Septic Tanks for Sewage Disposal.

The Alpha Portland Cement Company of Easton, Pa., will send on request its service sheets showing how to build a concrete septic tank which will convert sewage into a relatively harmless compound. The company has also service sheets for free distribution covering the construction of cement walks, cement roads, small bridges, culverts, foundations, gutters and curbs, park furniture, fence posts, garages, etc. These service sheets may be secured free of charge by mentioning THE AMERICAN CITY.

Street Flushers in Cleveland, Ohio.

The use of Acme street flushing trucks in the ci Cleveland is attracting much favorable comment the citizens of that enterprising municipality, as the are doing the work far more thoroly and effectively was possible with the old methods. Further inform illustration and prices can be secured from the Motor Truck Company, 433 Mitchell Street, Cad Mich.

A Book on Hauling Costs.

The Indiana Truck Corporation, Department 119, M Ind., has expended a large amount of time and m in compiling a valuable cost data book, which gives figures for your miles, your loads and your capa If you are interested in motor truck hauling or in trucks for street flushing work, you will find it worth to write for the Indiana catalog.

Municipal Equipment Catalog.

A large and attractively illustrated booklet en "Municipal Equipment," issued by The Springfield neering Co., Bushnell Bldg., Springfield, Ohio, des the "Seco" portable pumping apparatus for cle catch basins, gulleys and other indentures, together its many diversified uses, such as: spraying or sprin of plants, trees and shrubs, cold water painting, distance pumping, street sprinkling and flushing, u a heavy-duty dump truck, and general hauling. page photographs accompany and illustrate each o above uses of this apparatus.

White-Way and Industrial Lighting Equipment.

The George Cutter Company, 413 Notre Dame S South Bend, Ind., will send on request illustrated ca and price lists of its lighting equipment for White and industrial plants. The White-Way equipmen cludes ornamental posts equipped with octagonal o lux tops, Cutter Sol-lux globes and fixtures, and S First disconnecting potheads. The industrial li equipment comprises the distributing apparatus fo terior lighting and the fixtures and wiring device both interior and exterior lighting.

Economical Cleaning of Catch Basins.

An inexpensive outfit for this purpose is describ the circular distributed by George H. Holzbog & Jeffersonville, Ind. This outfit consists of a wate cart or wagon equipment with a diaphragm pum means of which sewer inlets may be cleaned out efficient and sanitary manner. A waterproof car also be used for hauling garbage, night soil and semi-liquid material.

Everything for Street Cleaning and Flus

No matter what your needs may be in the line of cleaning or flushing machinery, or whether you res a small town or a big city, you will find in the c of the Studebaker Corporation, South Bend, Ind. the type of street cleaning equipment adapted t needs and financial resources of your city.

Portable Sand, Stone and Gravel Heater.

A rotary heater equipped with oil burners is sho work in the illustrations of the new catalog of the Supply Company, 66 Broadway, Cambridge, Mass contrasted with hand methods, the value of this hea readily apparent, and on this account it is becomin more widely used by engineers and road contractors

(*Continued on page 40*)



Forty-Foot Street ickly Done

The Autocar short wheel-base enables this motor truck to turn around without backing in the average city street.

Autocar speed and handiness enable each unit to cover so much ground that fewer units are needed by the sprinking contractor or municipality.

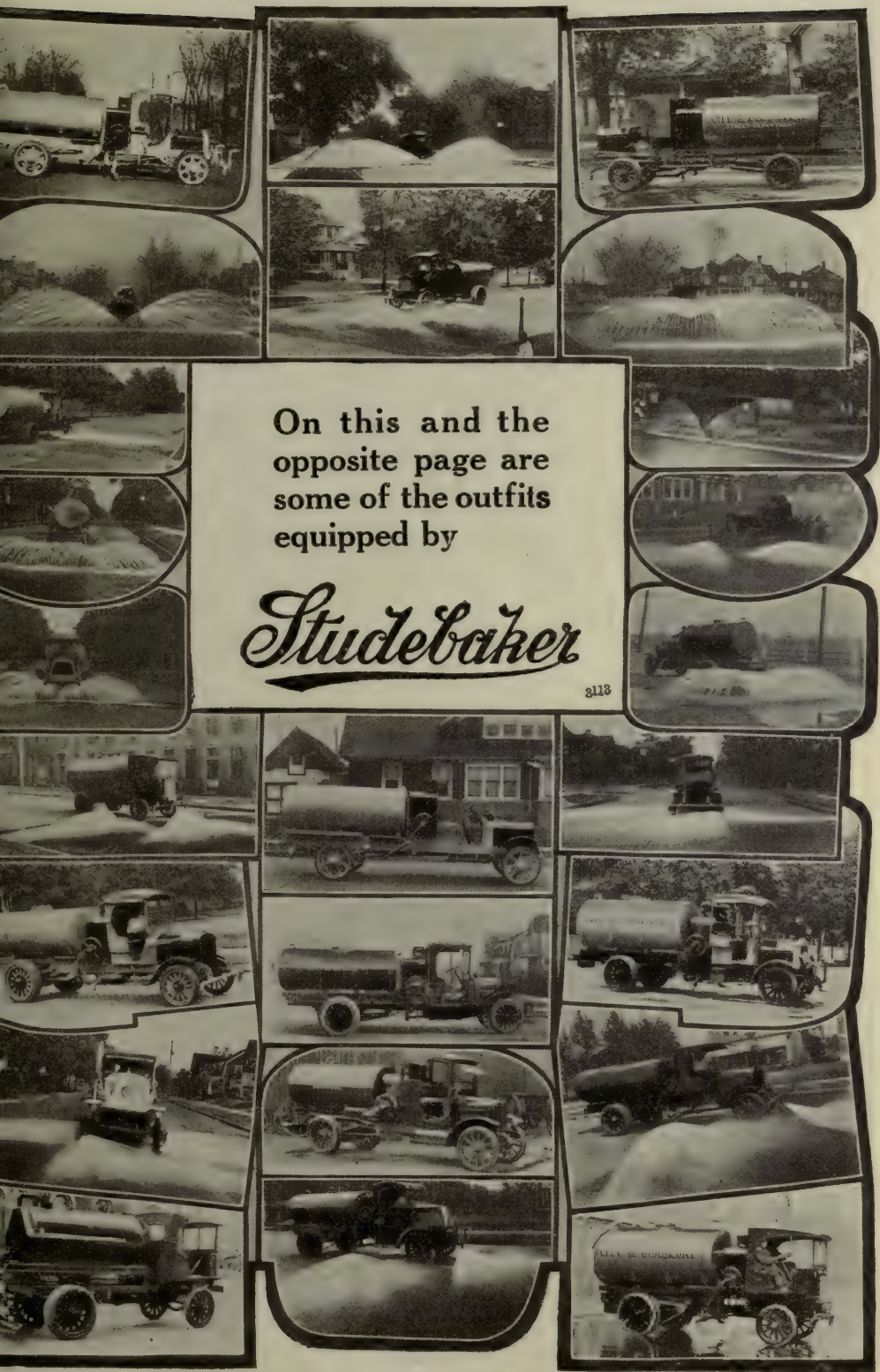
And Autocar equipment does not shake buildings that are adjacent to the streets being sprinkled.

Let us send you the catalog which lists more than 7,000 Autocar users.

THE AUTOCAR COMPANY
Ardmore, Pa. **Established 1897**

Autocar


Leading Manufacturers
Use and Endorse
Studebaker
MOTOR UNITS
3112


On this and the
opposite page are
some of the outfits
equipped by
Studebaker
3113



HOW are you cleaning your catch basins and sewers? In the old slow, expensive and disease-breeding way, with piles of filth on your streets? Or the "SECO" way?

The "SECO" Portable Pumping Apparatus cleans sewers and catch basins at a saving of 50 to 90% over the old way.

This apparatus is mounted on a special

KELLY-SPRINGFIELD CHASSIS

Write for Full Information and Catalogue

THE SPRINGFIELD ENGINEERING COMPANY

SPRINGFIELD **Bushnell Building** **OHIO**

KELLY-SPRINGFIELD MOTOR TRUCKS

THE BIG BROTHER TO THE RAILROADS.

For day-in and day-out work on big contracting jobs—road building—municipal work of all kinds—where continuous non-stop service is essential, Kelly-Springfield Trucks are unsurpassed. Kellys stand the strains and twists and have the power to come through, day after day, which is the best proof to any truck user of the correctness of Kellys flexible design, quality of material, and earnestness and stability of the institution producing Kellys—as it has for 12 years.

Kellys work while many other trucks are being worked upon.

1½ to 6 ton models

THE KELLY-SPRINGFIELD MOTOR TRUCK COMPANY

SPRINGFIELD *Builders of High Grade Trucks* **OHIO**



IN WOOD BLOCK STREETS

IN BRICK STREETS

IN SIDEWALKS

IN CONCRETE ROADS





THIS Prevents THIS

CAREY

Elastite

NAME REG. U.S. Patent Office

EXPANSION JOINT

Prevents buckling and cracking of brick, concrete and wood block pavements, through providing the slack which absorbs all contraction and expansion.



Elastite Joints are made of tempered asphalt compound held between two layers of asphalt saturated felt. They last as long as the pavement because summer heat does not dry them out or winter cold cause them to become brittle. The asphalt compound and the saturation in the felt insure the permanent elasticity, hence the name—"Elastite".

Elastite Joints come in strips of any desired dimensions and are laid with as little expense, and in the same way, as ordinary spacing strips.

Remember there is only one genuine Elastite Expansion Joint on the market and always specify or purchase it by name.

Write for sample and descriptive literature.

THE PHILIP CAREY COMPANY

8 Wayne Avenue Lockland, Cincinnati, Ohio

Nothing Talks Like Actual Performance

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FIRE COMMISSIONERS
CENTRAL FIRE STATION

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KINGSTON, N. Y., December 17th, 1918.

American La-France Fire Engine Co.,
Elmira, N. Y

Dear Sir:-

Perhaps the following will interest you. On the evening of December 13th at five o'clock P.M. our department received a call to a fire in an ice house, which was located along the river front three miles from our station.

The call was answered with an American La-France pumper, Started pump at 5:25 P.M. Dec. 13th and pumped continously for 21 hours and 15 minutes, without a skip or miss of any kind.

Pumped water through 1300 feet of 2½ inch hose, three lines, one 750-350-200 foot lines.

When orders were received to stop pumping apparatus returned to station under its own power, and found to be in perfect condition and immediately placed in service.

This piece of La-France apparatus has more than proven its worth to the City of Kingston.

Very truly yours,
J. L. Mansbery
Deputy Fire Chief.

The Performan
and
The Car:



Kingston's American-La France Type 75 Triple

THE SIGN OF SERVICE

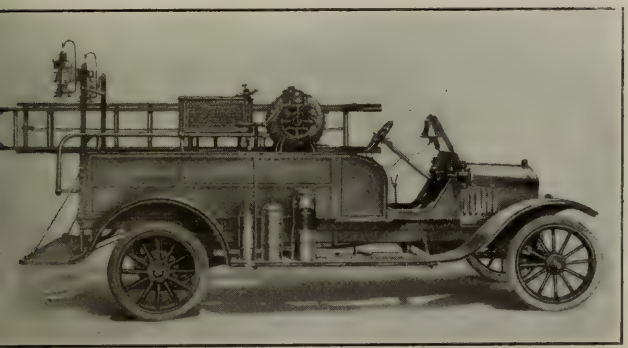
It is the constant recurrence of performances like this that serves to emphasize what we have always maintained—American-LaFrance motor fire apparatus is designed and built for service.

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

ELMIRA, N. Y.

AMERICAN-LAFRANCE FIRE APPARATUS ON FORD CHASSIS

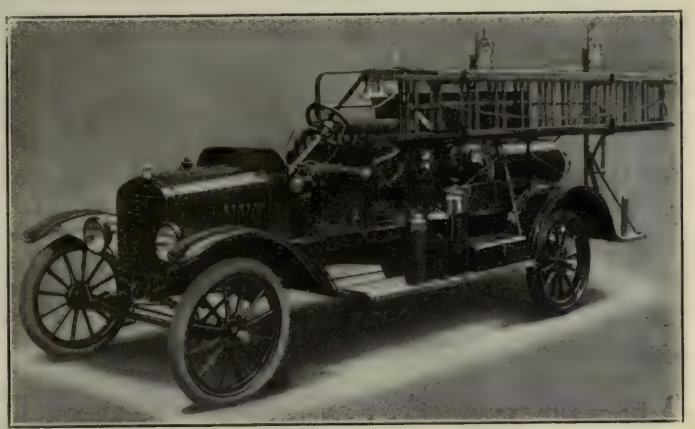
ire Car to Meet the Requirements of Any Small Town or Village



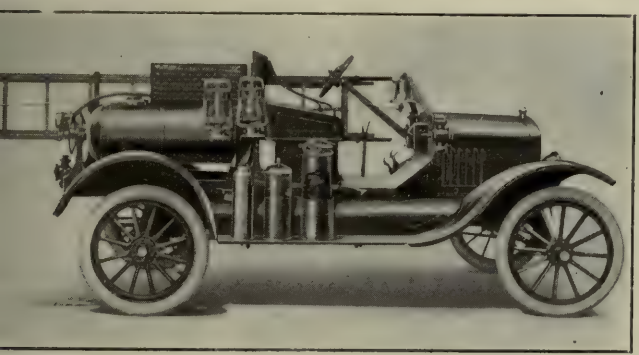
ican-LaFrance Combination Hose & Chemical Car On Ford One Ton Chassis.

Designed for the small towns and villages equipped with water pressure system. It is equipped with a hose body for 1,000 ft. 2½" fire hose—1 40-gal. Champion Chemical Tank, 1 20-ft. Extension Ladder, 1 12-ft. Roof Ladder, 2 Babcock Fire Department Extinguishers, Axe, Crowbar, etc. **Over 50 already in service.**

esigned to meet the exg fire conditions in any l town and village which uipped with, or without, r pressure system. Al- a complete fire depart- t in itself. It is equipped 2 35-gal. Chemical ks arranged to throw a inuous chemical stream, 1 . Extension Ladder, 1 . Roof Ladder, 2 Bab- Fire Department Exuishers, Axe, Crowbar, necessary indispensable ighting tools.



American-LaFrance Double Tank Chemical Car on Ford One Ton Chassis.



rican-LaFrance Double Tank Chemical on Ford Touring Chassis.

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Unless playground equipment is made of high grade material and by expert mechanics, it may do more harm than good. Poorly made apparatus may break and cause serious injury to the children. You surely do not want to spend money for that kind of apparatus, or for apparatus that requires constant repairing. If you are going to equip playgrounds—do the job right. Buy the apparatus that has been chosen by the majority of other cities—EVERWEAR APPARATUS. With Everwear Equipped playgrounds, you are safe and the children are safe.

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Every Sensible Minded Person Admits

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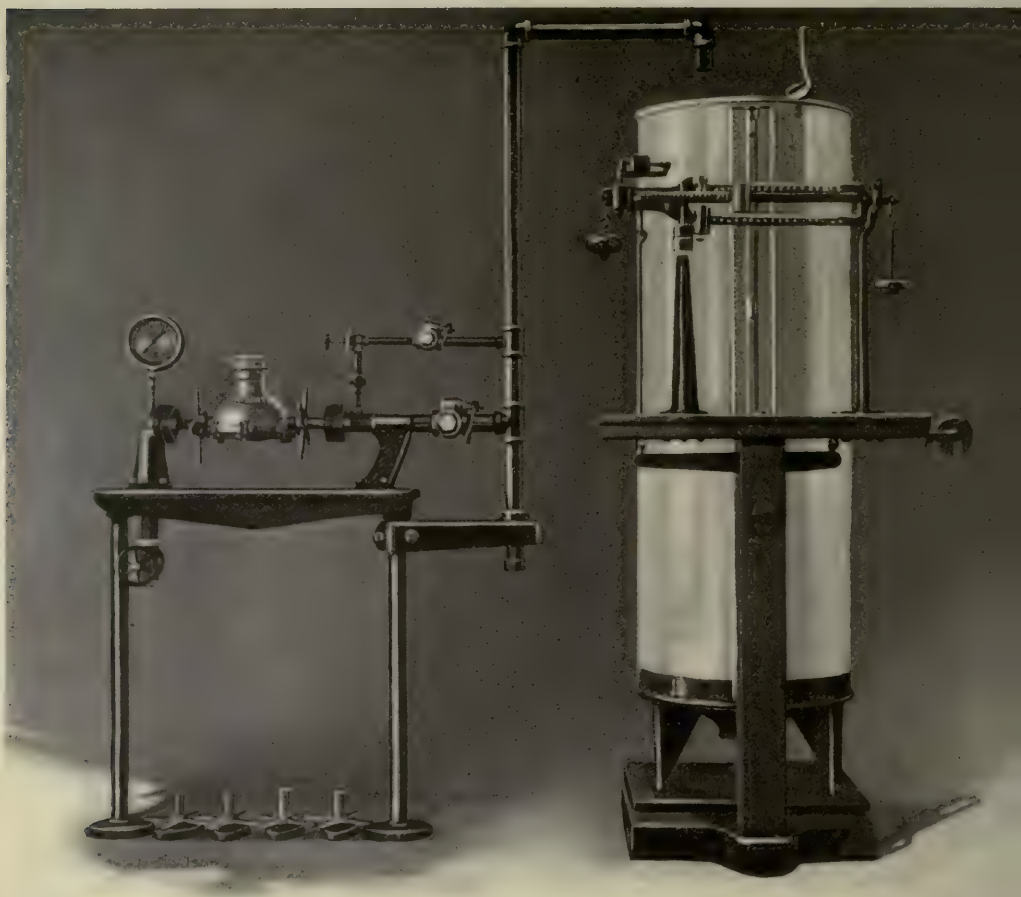
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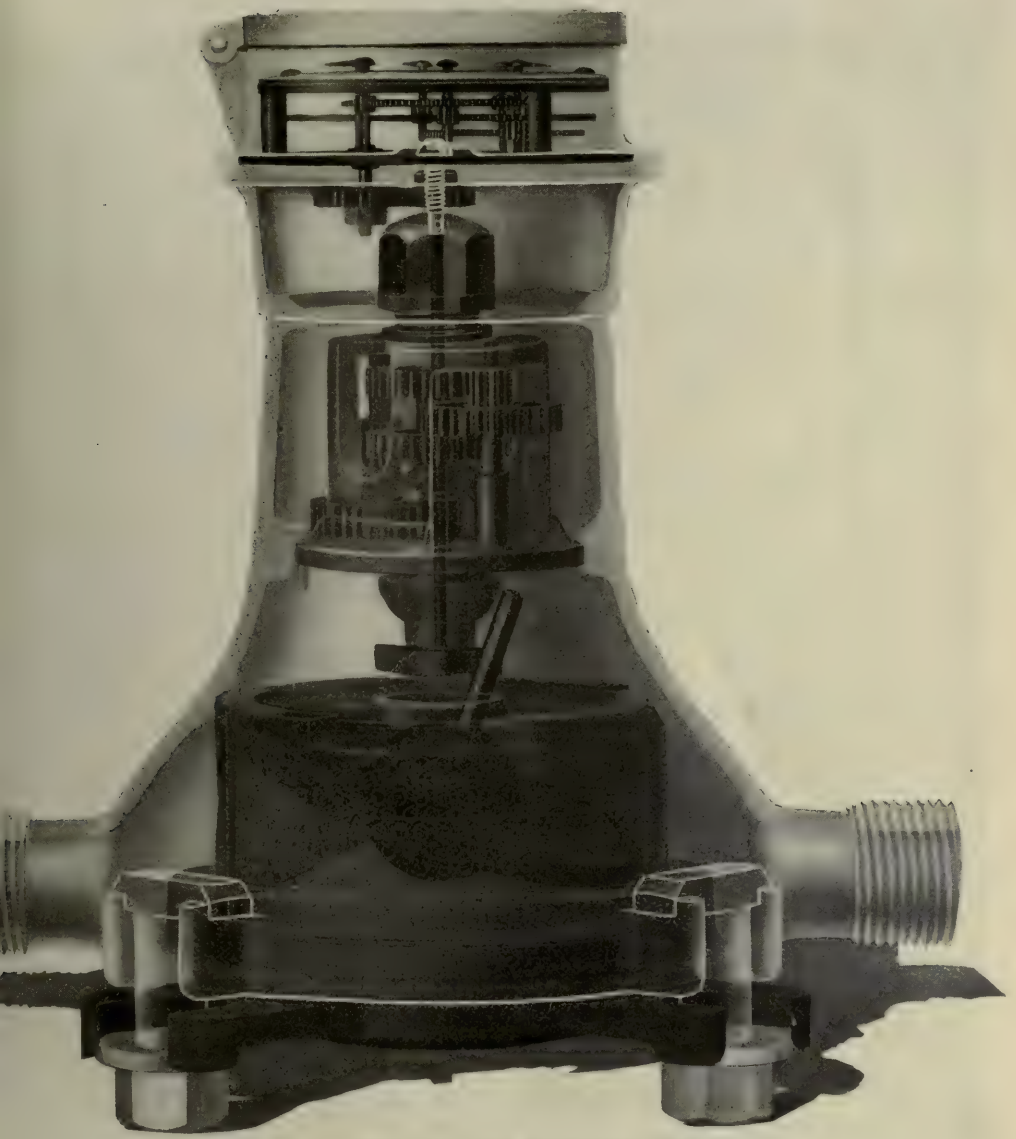


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LEAGE FIGURES ON
ON PIPE



In Philadelphia—from **San Francisco to Tampa, Florida.**

In Boston—from **New York to Denver.**

In Baltimore—from **Philadelphia to Aberdeen, South Dakota.**

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These examples are drawn from only a small number of cities using Cast Iron Pipe.

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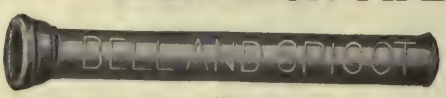
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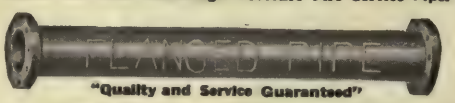
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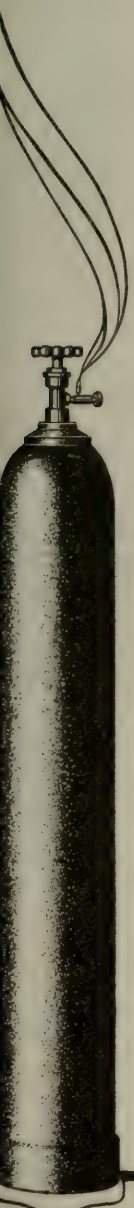
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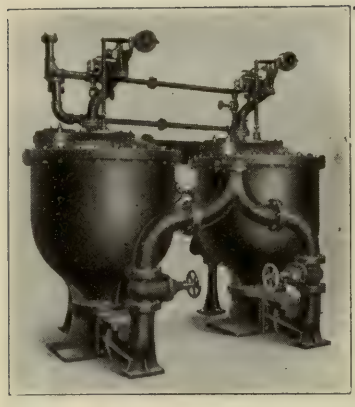
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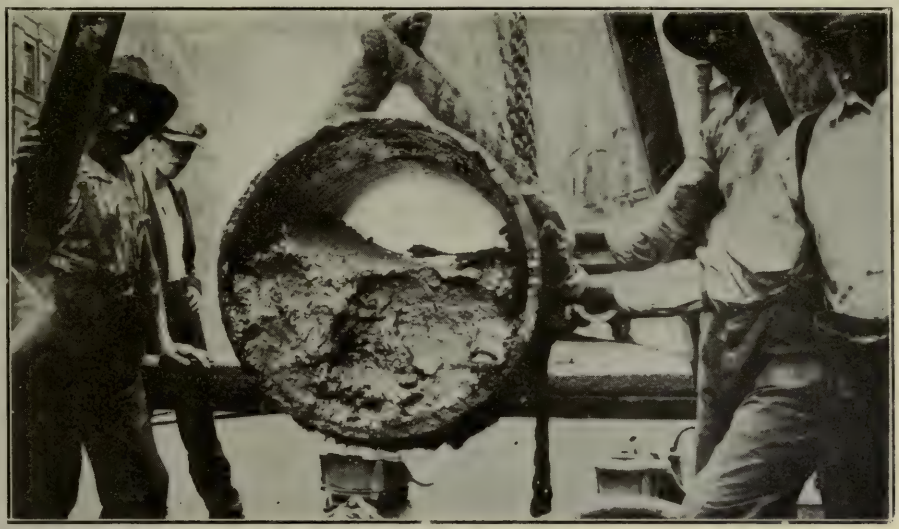
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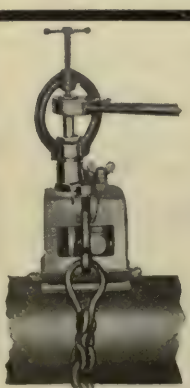
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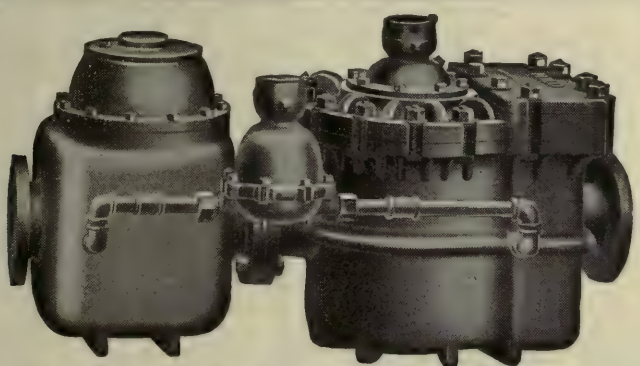
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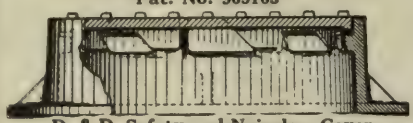


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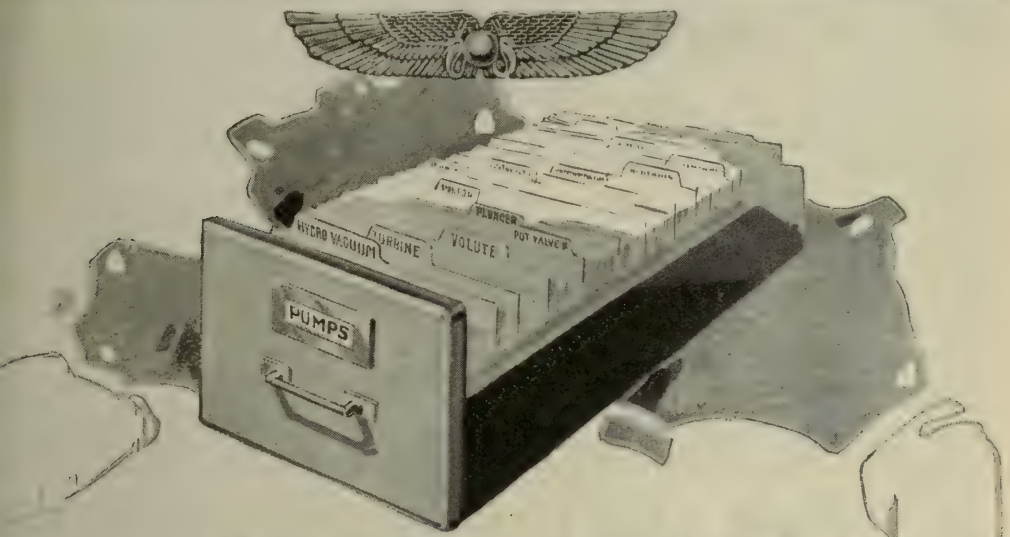
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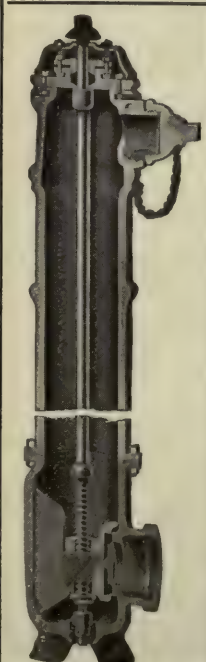
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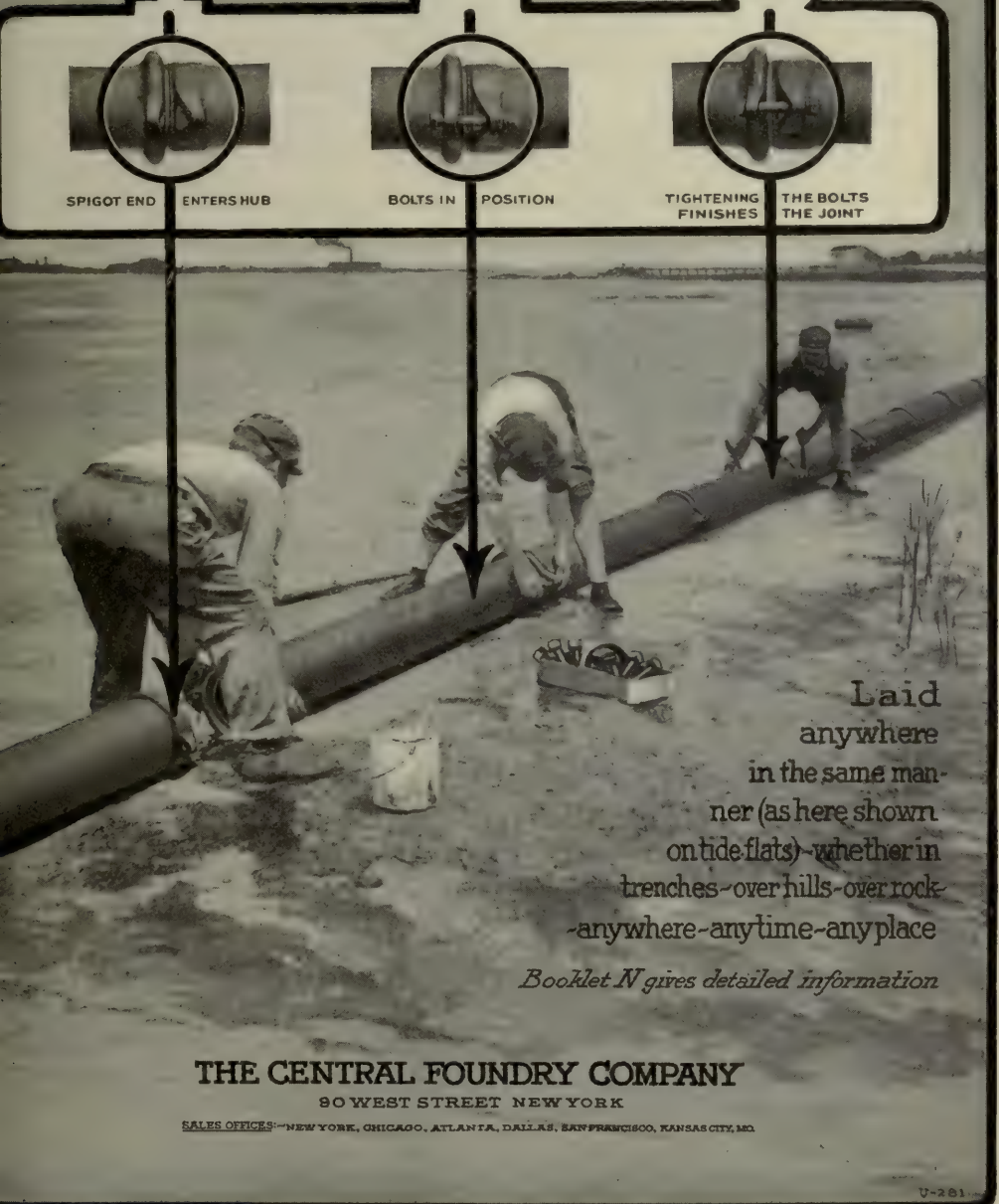
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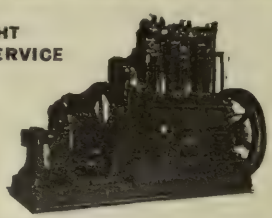
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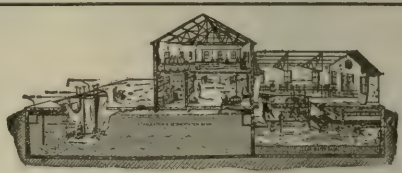
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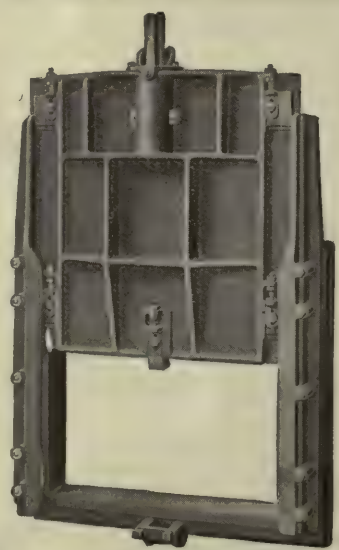
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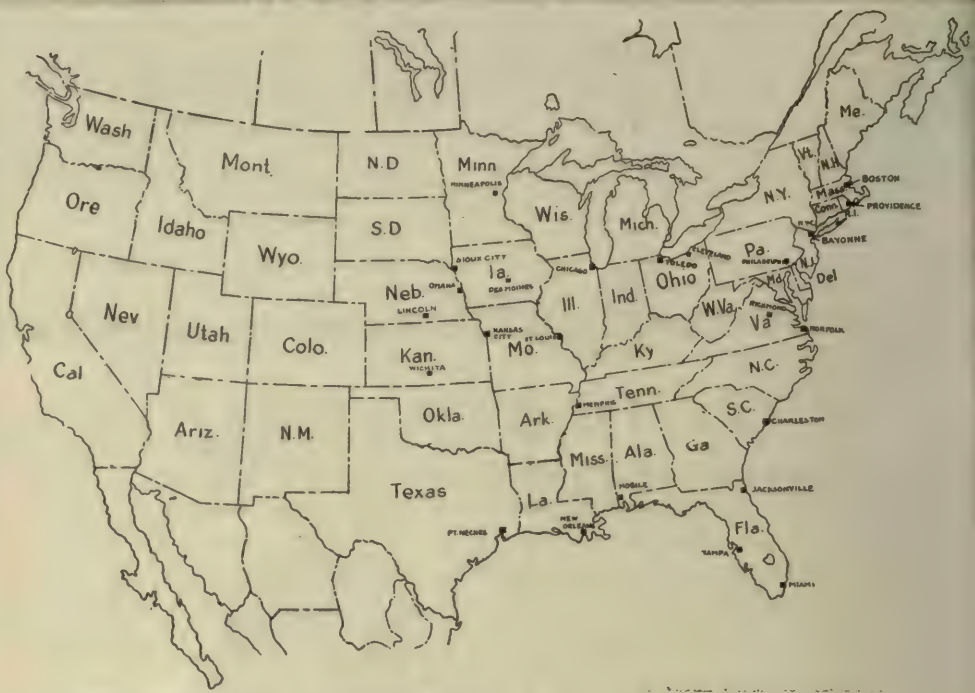
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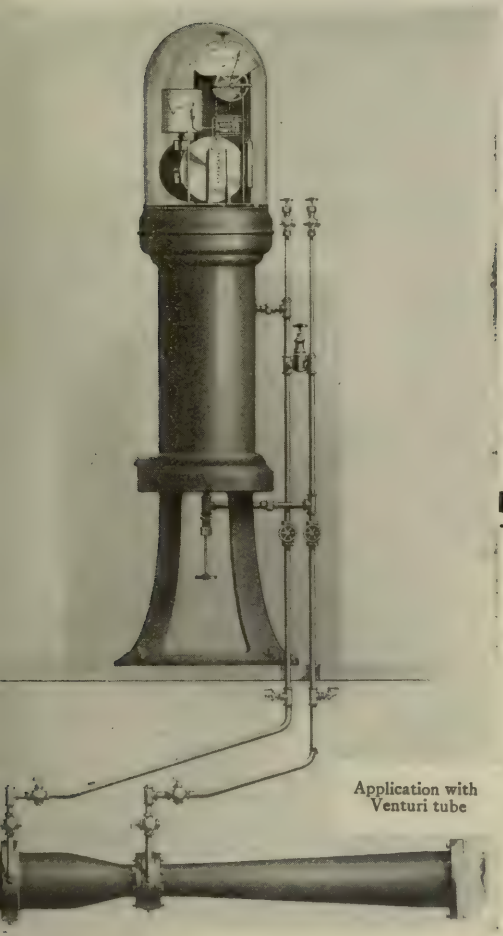
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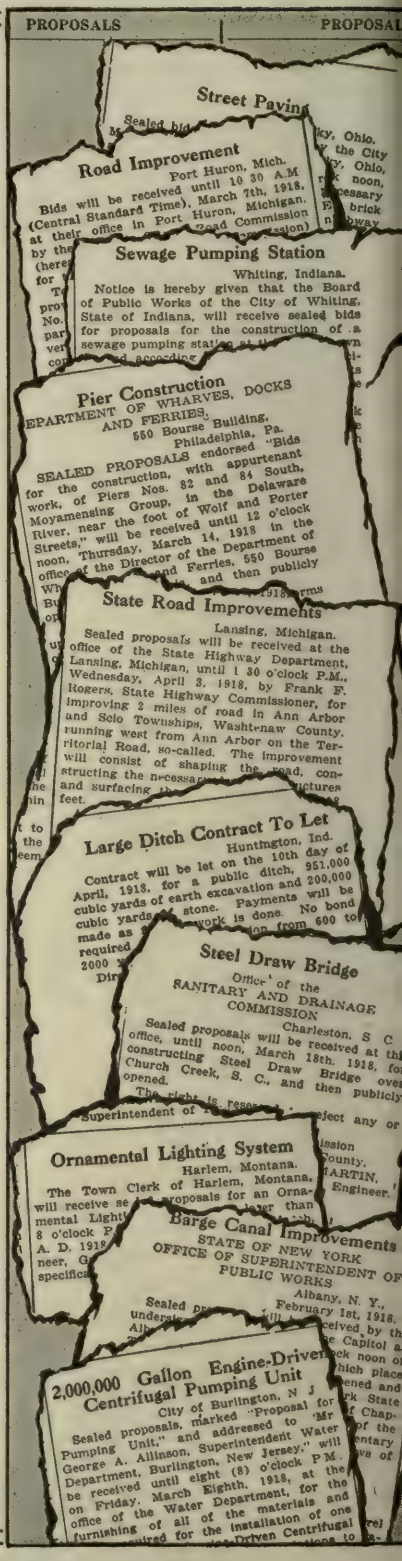
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Volume XX
Number 2

Financing Good Roads in Virginia

A Well-Balanced Plan for Future Highway Construction and Maintenance

By Westmoreland Davis
Governor of Virginia

A PLAN has been evolved in Virginia whereby a permanent highway system may be financed by the imposition of a mill tax on the assessed property value (1918) of $1,300,000,000, combined with a 50 per cent increase in the license tax on automobiles, rendering available, with the other revenue reasonably assured over a period of nine years, in round figures, $27,000,000, for construction and $12,000,000 for maintenance.

The mill tax, rather than the mill-and-one-half, has been adopted, as it is felt that provision must also be made for the betterment of rural schools by the next Legislature.

It must be remembered that a mill tax means simply a tax of $1 upon the $1,000 of assessed values, and considering the low assessments of property as related to actual value, this would amount, as a tax in Virginia, to less than 33 1/3 cents on the $1,000 of actual value.

It is needless to dwell upon the benefit to be derived from good roads. Everybody wants good roads; everybody preaches good roads; and now we must realize that if we would have good roads, we must pay for them. Improved highways must not only add to the value of our land, but engender community spirit among the people, which will check the flow of population from country to town. Every owner of an automobile, if he be a thoughtful man, must know that better roads mean less wear and tear on the machine, longer life for his tires and more mileage for less gasoline. Indeed, the saving upon gasoline alone in a year, with better roads, and 5,000 miles traveled, would justify 50 per cent increase in the license tax upon automobiles in Virginia. The teams of our farmers will haul more in less time over good roads, and the whole spirit of country life, with town, school and church easy of access, will be changed.

Let us see how this combined tax would prove available and what may be derived for the state for the purpose of constructing and maintaining highways by the imposition of this mill tax, the increased automobile tax and other revenues, over a period of nine years.

It may be of interest to note the rates on typical cars for a number of states, as reported by the American Automobile Association:

State	Ford	Dodge	Packard
New York	$5.00	$5.00	$15.00
Ohio	5.00	5.00	5.00
Illinois	6.00	6.00	16.00
Pennsylvania	10.00	10.00	15.00
Michigan	9.25	11.75	23.00
Wisconsin	10.00	10.00	10.00
Maryland	13.20	14.40	28.80
Virginia	8.80	9.60	19.20
Tennessee	6.60	7.20	14.40
Louisiana	5.50	6.00	12.00
Utah	5.00	5.00	15.00

Automobile licenses in Virginia have returned to the state in the last few years the following sums of money:

Year	Amount of Tax	Percentage of Increase Over Preceding Year
1910	$20,669	
1911	35,575	73%
1912	51,245	44%
1913	80,025	56%
1914	116,188	45%
1915	170,646	47%
1916	271,610	69%
1917	483,470	44%
1918	648,454	32%

That a reasonable future increase from the return from licenses may be anticipated is indicated below, showing for other typical states the number of machines, total population and the population per machine:

State	Number of Machines	Population	Machines to Number of Persons
Ohio	297,239	5,181,220	1-17
New York	345,936	10,366,778	1-30
Illinois	285,000	6,131,572	1-22
Pennsylvania	254,735	8,510,515	1-33
Wisconsin	142,080	2,513,758	1-18
Maryland	17,854	1,360,091	1-28
Virginia	44,550	2,186,768	1-49
Tennessee	42,000	2,288,044	1-54
Louisiana	25,406	1,829,130	1-72
Utah	17,065	433,267	1-25
Michigan	189,000	3,074,560	1-17

The last Legislature laid out a scheme of road-building of about 3,740 miles, but the building of 1,200 miles, averaging $20,000 per mile, of road construction in the immediate future would lay a splendid foundation upon which may be built a complete highway system in coming years. I have assumed an increase in future yearly revenue from automobile licenses and from the mill tax as based upon experience in Virginia and in other states for the period of construction in Virginia indicated, 1920-1928:

Year	1 Mill Tax	Automobile Licenses	Amount Available
1920	$1,447,000	$1,179,000	$2,626,000
1921	1,548,000	1,296,000	2,854,000
1922	1,625,000	1,425,000	3,050,000
1923	1,706,000	1,567,000	3,273,000
1924	1,793,000	1,723,000	3,516,000
1925	1,882,000	1,895,000	3,777,000
1926	2,013,000	2,084,000	4,097,000
1927	2,113,000	2,292,000	4,405,000
1928	2,218,000	2,521,000	4,739,000
	$16,345,000	$15,982,000	$32,347,000

It is assumed that the automobile license money will be divided between maintenance and construction on the basis of two-thirds to maintenance and one third to construction. On this basis the amount from these two sources available for construction becomes available as follows; from a one-mill tax and one-third of automobile licenses, 1920-1928:

Year	1 Mill Tax	One-Third Licenses	Available for Construction
1920	$1,447,000	$393,000	$1,840,000
1921	1,548,000	432,000	1,980,000
1922	1,625,000	475,000	2,100,000
1923	1,706,000	522,000	2,228,000
1924	1,793,000	574,000	2,367,000
1925	1,882,000	632,000	2,515,000
1926	2,013,000	695,000	2,708,000
1927	2,113,000	764,000	2,877,000
1928	2,218,000	830,000	3,048,000
	$16,345,000	$5,317,000	$21,663,000

In addition to the foregoing, there are two other items which may be confidently counted upon in estimating the means available for road-building during this period of construction—Federal aid and convict labor. The present Federal aid available is 1918, $200,000; 1919, $300,000; 1920, $400,000; 1921, $500,000. It is believed that Congress will continue this maximum grant indefinitely and many expect that it will be increased to a million annually.

The state is at present working between 1,000 and 1,200 convicts on the roads at a cost of about $250,000 a year. Their value may be placed at this figure, although their actual value to the state is probably $600,000 a year. If we assume that one-half of this service is devoted to construction and one-half to maintenance, the amounts shown in the table at the top of page 105 are estimated to be available for construction in the years 1920-1928.

In addition, the following sums are estimated to be available for highway maintenance over the same period, exclusive of county appropriations:

Year	Two-Thirds Auto Licenses	Convict Labor	Total Available
1920	$786,000	$125,000	$911,000
1921	864,000	125,000	989,000
1922	950,000	125,000	1,075,000
1923	1,044,000	125,000	1,169,000
1924	1,148,000	125,000	1,273,000
1925	1,264,000	125,000	1,389,000
1926	1,390,000	125,000	1,515,000
1927	1,528,000	125,000	1,653,000
1928	1,660,000	125,000	1,785,000
	$10,634,000	$1,125,000	$11,759,000

The exact amount to be devoted to construction and maintenance should be left for determination by constituted authority. The combined amounts estimated to be available for construction and maintenance exclusive of county appropriations in 1920-1928, are:

Year	Construction	Maintenance	Total
1920	$2,465,000	$911,000	$3,376,000
1921	2,605,000	989,000	3,594,000
1922	2,725,000	1,075,000	3,800,000
1923	2,853,000	1,169,000	4,022,000
1924	2,992,000	1,273,000	4,265,000
1925	3,140,000	1,389,000	4,529,000
1926	3,333,000	1,515,000	4,848,000
1927	3,502,000	1,653,000	5,155,000
1928	3,673,000	1,785,000	5,458,000
	$27,288,000	$11,759,000	$39,047,000

The next Legislature can levy the mill tax and increase automobile licenses, which will enable work to be begun in that year. The increase in automobile licenses is approximately equal to the one-mill tax rate so that both property holder and automobile owner, who benefit equally from the

	One Mill Tax and Auto Licenses	Federal Aid	Convict Labor	Total Available
1920	$1,840,000	$500,000	$125,000	$2,465,000
1921	1,980,000	500,000	125,000	2,605,000
1922	2,100,000	500,000	125,000	2,725,000
1923	2,228,000	500,000	125,000	2,853,000
1924	2,367,000	500,000	125,000	2,992,000
1925	2,515,000	500,000	125,000	3,140,000
1926	2,708,000	500,000	125,000	3,333,000
1927	2,877,000	500,000	125,000	3,502,000
1928	3,048,000	500,000	125,000	3,673,000
	$21,663,000	$4,500,000	$1,125,000	$27,288,000

improvement, will in like manner pay therefor.

Experience has shown that it is idle in these days of heavy traffic to build lightly constructed highways, and the endeavor has been to plan for a system that will prove a boon and lasting benefit to the state. If we are to end the discussion of the benefits to be derived from good roads and to enter upon their building, we must be prepared to pay for them. The next Legislature should be known as a "Good Roads Legislature," and candidates should declare themselves upon the subject during the coming campaign.

The sums to be expended in a great road-building program are too great and the powers incident thereto are too vast to be confided to the arbitrary power of one man, no matter what may be his character or his ability; and a Highway Commission, of which the Governor should be a member, to serve without compensation, should be given general supervisory power over all road work.

It is time the state was rid of its swaddling clothes, so far as the constitution inhibits the sale of bonds for road-building. This question should, by referendum, be submitted to the people, so that they may determine whether they prefer to continue the policy which shall have then been inaugurated, or to issue bonds for road-building instead.

A Ruined Road

This Culvert Proved Inadequate Thru No Fault in Design

By P. P. Sharples

ROAD engineers constantly harp on the necessity of keeping water off a road. Seldom, however, is such a vivid example of its destructive action shown as occurred at Peterborough, N. H., on August 8, 1915. At about 6:15 rain began to fall heavily like a tropical shower. It developed into what is known in these regions as a cloudburst. There is no weather station nearby to give an accurate gauge on the rate of rainfall, but, from experience of rainfalls that were actually measured, it must have been at least at the rate of 1 inch in ten minutes. At 6:30 p. m., the water was flowing down the road quite rapidly, but had not begun its destructive effects, as I drove an automobile over it without noticing anything wrong with the road. At 7 o'clock, when the rain practically ceased, I had occasion again to go down to the road, and found it absolutely impassable. The water had swept away all the gravel, exposing the large stone in the foundation of the road. In some places this excavation had reached six feet.

To give some idea of the amount of material removed on a stretch of road 200 yards long—it required the work of three two-horse teams for five days, hauling from a bank not half a mile away, to repair the damage. The trouble arose thru the inability of a culvert to carry away the rapid accumulation of water over a small drainage area of only a few acres. This culvert was put in about forty years ago, and no trouble had ever been experienced with it. An examination of the culvert showed that it was practically free, altho a small amount of brush and hay had been lodged in it by the downpour.

A Practical First Step Toward Maintaining the Natural Beauty of a Highway

Remove the Obnoxious Signboard



SUCH SIGNBOARDS AS THESE DESTROY THE ATTRACTIVENESS OF OUR COUNTRY THOROFARES. HAVE YOU ORDINANCES IN EFFECT TO PREVENT SUCH DEFACEMENT, AND IF SO ARE THESE LAWS BEING PROPERLY ENFORCED?



A DAY'S HAUL WHICH MEANS A MORE ATTRACTIVE HIGHWAY

Utilizing More Mechanical Devices in Road Construction*

Michigan County Engineers Are Awake to Opportunities

By Frank F. Rogers, C. E.
State Highway Commissioner, Michigan

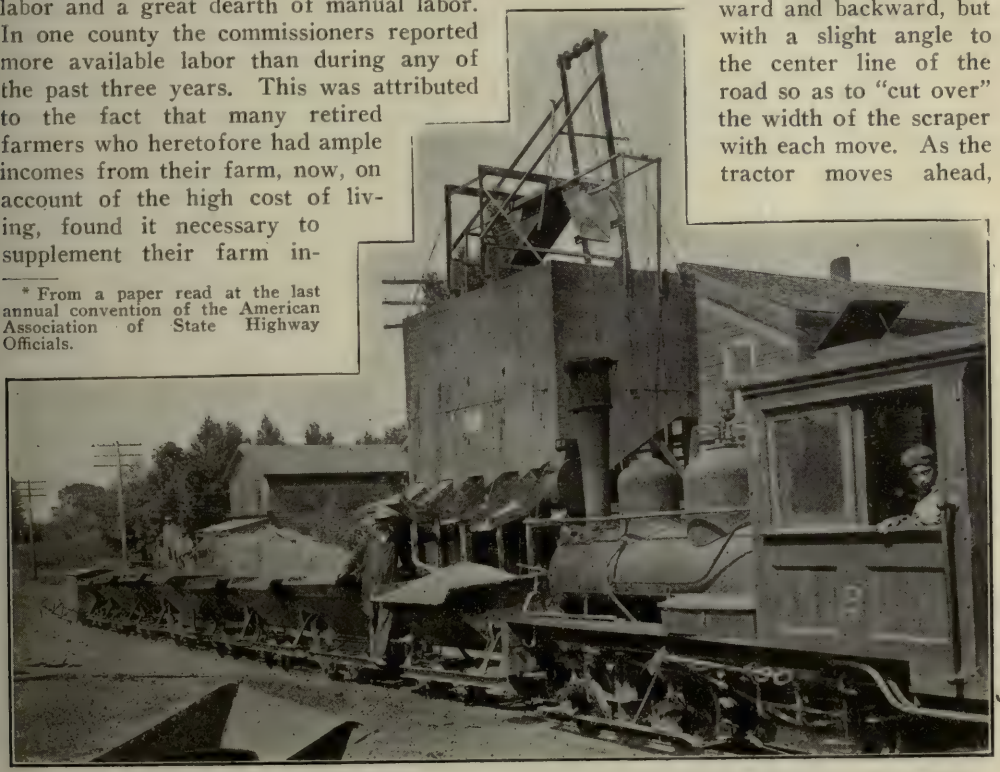
THE cost of materials and labor entering into road construction has advanced to such high figures that in many localities it has been a question of attempting to save in the cost of labor or practically discontinue road-building. In Michigan the sentiment for good roads is so great that it would have been impossible for the State Highway Commissioner to stop road building entirely during the war period, even if he had attempted to do so. In fact, there never was so much money available for road-building purposes in Michigan as during the past year.

Some peculiar economic conditions have manifested themselves. In most localities in Michigan there was a surplus of team labor and a great dearth of manual labor. In one county the commissioners reported more available labor than during any of the past three years. This was attributed to the fact that many retired farmers who heretofore had ample incomes from their farm, now, on account of the high cost of living, found it necessary to supplement their farm income with more or less manual labor. These men were all past middle age, and the inducement of very high wages for manual labor, from 35 cents to 50 cents an hour, doubtless had some influence in inducing them to become day laborers.

Tractors and Steam Shovels for Grading

In grading operations, tractors have largely superseded horse power. Not only were tractors used for hauling blade graders, but ditching has been successfully done with a tractor and flat board scrapers. A scraper was hitched to each end of the tractor, which has a very short wheel base. The tractor was then moved across the road, alternately forward and backward, but with a slight angle to the center line of the road so as to "cut over" the width of the scraper with each move. As the tractor moves ahead,

* From a paper read at the last annual convention of the American Association of State Highway Officials.



AN INDUSTRIAL RAILWAY USED IN HIGHWAY CONSTRUCTION

the scraper hitched to the rear end draws a full load up onto the road grade, while the scraper hitched to the front end is backed to the ditch, and vice versa. This way of using the tractor is said to be much more rapid than the work of two teams.

Grading has also been done with the same type of scraper by using a small gasoline reversible hoist placed on a truck stationed in the center of the road grade. A scraper was hitched to each end of the cable, the center of which was wound on the drum, so that as one scraper was drawn out of the ditch with a full load the other was released and backed to the ditch, and vice versa. This method of grading has also been quite satisfactory.

Steam shovels have been used quite extensively in road grading, not only where the excavation is heavy, but sometimes on rather light work where not more than a foot or even less had to be scalped off from the old grade.

The Delivery of Materials

Mechanical power for delivering materials to the roads has been used quite extensively, and ranges from the motor truck to the industrial railway; in fact, it may be said that mechanical hauling has very largely displaced team hauling on Michigan roads. I have in mind one case where a motor truck is making five trips with three-yard loads of gravel on a haul so long that teams working on the same job make only two trips with two-yard loads, the truck delivering fifteen yards as compared with four yards for each team. It should be remembered, however, that truck hauling is not a success on heavy grades nor in loose sand or deep mud.

The industrial railway has been used very successfully on long hauls and on light grades. Wayne County and Delta County and some contractors have used the industrial railway with much success.

L. E. Adams, County Highway Engineer of Alger County, Munising, Mich., reports: "We have been using the motor truck for the transportation of materials along the highway in the construction of macadam roads for the past four years and find a great saving in cost over team labor. The cost of truck hauling is less than one-half the cost of team hauling. We like the four-wheel-drive truck for dragging earth and gravel roads and for general maintenance work. The heavy five-ton trucks are used only on construction work, for they move much slower than the lighter truck."

Labor Saved in Marquette County

K. I. Sawyer, County Road Engineer of Marquette County, Ishpeming, Mich., states: "Our road grading has been done the past season using a tractor to haul the road machinery. This substituted one man and the machine for two or three teams. It is impossible to make a cut equivalent to three teams, or, for that matter, hardly equivalent to what two teams would do, but the speed of the work is such that by making lighter cuts and more of them, work equivalent to a three-team grader outfit has been accomplished.

"One of our drag men also uses a tractor in his dragging operations. I am not satisfied as to the advisability of this, for where there is a crust on the road, as in sand-clay construction, the question arises as to whether the lugs on the wheels do not do as much damage as the dragging does good.

"The county operates one service truck, which is driven by the maintenance superintendent. This enables him to cover all his work and at the same time deliver the necessary supplies and small equipment from our warehouse to the various maintenance and construction jobs. An ordinary Ford runabout with a jump box is used for this purpose. It does away with practically all supply teams, as well as placing one man in a position to keep constant check on maintenance operations.

"In our surfacing operations in 1916 we employed seventeen men and five teams, including roller men, foreman and cook. The past year we employed a maximum force of eight men, including foreman and roller men, and one team, and laid approximately double the amount of stone on longer hauls. The wife of one of the roller men served as cook, which was only made possible on account of the small crew.

"The machinery used on this job was as follows: one hand pump; a 6-h. p. Fairbanks gas engine; a 250-gallon Morse centrifugal pump, both mounted on one set of skids and belt-connected. The same apparatus was used for pumping water for sprinklers and pumping bitumen from tank

cars into the tank wagons. A motor truck also was substituted for four teams. An endless-belt conveyor of the grain type without buckets was used for unloading the stone cars. This took the place of six men, while the spreading apparatus on the truck cut down the necessary spreading crew. The roller crew remained the same, but because of better watering conditions one sprinkler with a team proved all that was necessary except on long hauls or in exceedingly dry weather. When water had to be pumped by hand, two teams and two extra men were required for the same work. I might add that we resorted to winter hauling on a considerable portion of our gravel surfacing work in order to cut down the cost, and I am nearly convinced that winter hauling with team and spreader will compare favorably with motor truck hauling in summer."

The contractors on the North Saginaw road, in Genesee County, in laying 10½ miles of 18-foot reinforced concrete on a 30-foot road bed, costing $270,000, developed a construction plant where the aggregates were dumped from cars and motor trucks into a power loader, elevated to storage bins, loaded into 1½-cubic-yard dump cars, hauled in trains on a portable 30-inch gauge track by a motor engine to the concrete mixer, where the cars were hauled up an incline track by cable and the aggregates dumped into a segmental revolving drum, each segment containing one charge of coarse aggregate and one charge of fine aggregate, which was automatically measured and dumped into the charging hopper of the mixer. The cement in bulk was loaded into a covered car transported and elevated in the same way, from which it was measured in a swinging dump box, and dumped into a charging hopper immediately following the aggregate.

This plant reduced labor to a minimum and made it easier, while the aggregates were kept clean, the sub-grade perfectly maintained, and the mixture kept uniform thruout the work.

Portable Construction Camps

C. F. Winkler, County Road Engineer of Gogebic County, writing regarding road maintenance, says: "The past summer I had built two sets of car camps on wheels, two camps in a unit, a cook and sleeping camp. These, with two tractors, have maintained our road from Bessemer to the Iron County line, a distance of approximately 70 miles, as never before and at a saving of the cost of the tractors. In other words, I figure one summer's work will pay for the tractors.

"Most of this distance, as you know, is thru virgin timber, where camping facilities are at a premium, and usually five to seven miles from the work.

"The camp car is, as all know, no innovation, but with tractors a move can be made every day, if necessary, thus keeping the crew within easy working distance of the job, hence the economy of this plan."

Concrete Roller

J. W. White, County Highway Engineer of Monroe County, Monroe, Mich., reports the use of a novel concrete roller as follows: "Our first concrete roller was a small one, made of 2-inch plank, 3 feet in diameter and 15½ feet long, and weighed 2,200 pounds. This roller had a tendency to make the concrete wavy, which was attributed to the small diameter, so we had a larger one constructed with a diameter of 5 feet and weighing only 2,000 pounds. The surface of both rollers was concave, so as to give the required crown to the roadbed.

"We find that rolling compresses a 5-inch slab of concrete between a quarter and



THE MONROE COUNTY ROLLER FOR CONCRETE ROADS

⅜ of an inch. We have rolled 10 miles during the season just closed; and if the above statement is correct, on the basis of ¼-inch compression, we have squeezed 657 cubic yards of voids and water out of the 5-inch slab. This statement sounds rather large, but seems to be backed by facts.

"The larger roller is made of steel and cost a little over $400. It has not added one dollar to the construction cost of the road other than the initial cost of the roller, and our experience would indicate that one roller could be depended upon to roll several hundred miles of concrete without wearing out. The surface of the rolled slab is as true as the average concrete road surface. The roller picks up the mortar just enough to leave a pebbled effect, which forms an ideal base for the asphalt top.

"In the finishing operation we have a templet, which rides on the forms and is dragged ahead by the mixer. When fifteen or twenty feet of concrete have been spread, the roller is rolled back and forth an average of three times. The size of the roller gives it the appearance of being very cumbersome, but it is easily rolled by hand by the two men whose duty it has been to put the finishing touch on the slab.

"We have constructed approximately forty miles of concrete road in Monroe County in the last three years, and until we hit on the idea of rolling to get a well-compacted concrete our work was in spots very unsatisfactory."

Gravel Washing Plant

Alex. McKay, County Road Engineer of Calhoun County, explains a method of obtaining road gravel by sluicing and washing as follows: "The washing plant is now at its fourth location. I have no definite data regarding the first two sets, as to amount of material moved to secure the gravel. On the first location we were able to secure an average of 100 yards per day for most of the time, but the later sets have been in more difficult situations.

"At the third set, north of Bedford, work began March 19, 1918, and ended August 31, 1918. The prospect was so poor that we located at that point only after every other prospect had been investigated and we had spent over $100 digging into every hill and running down many reports within a radius of three miles. The pit was cross-sectioned before and after working; thus the figures as to yardage moved are quite accurate. All the gravel was hauled by the yard, so we have another check on the total amount of material secured.

"The largest day's run was 44 yards, and the smallest 15 yards. Men employed were: foreman at $5, engineer at $3.50, hoseman and general helper each at $3. About 28 gallons of kerosene were used each day in two engines. A 15-h.. p. engine ran a 3-inch centrifugal pump, giving approximately 250 gallons per minute at about 20 pounds pressure at the nozzle thru 500 feet of 6-inch spiral pipe. A 6-h. p. engine was used to run a revolving screen and elevator. A bar 'grisley' on top of bins removed over-size stone. Water was secured from a near-by creek. Our fine screen was a square mesh of 1 1/16-inch opening, but there was very little fine sand carried over.

Total days worked, 10 hrs. each	131
Total yards gravel secured	3,200
Average daily yardage	25
Average daily cost of operations	$19.16
Total cost of operation	$2,511.81
Total yards moved from pit	10,500
Average cost per yard in bin	$0.78

"After getting all the available gravel in that location, we moved the plant to the fourth, or its present, location, 1½ miles farther from the road. This pit was much more stony and required an additional man to fork stone away from the sluices. The pit had been worked two years before and abandoned on account of the large amount of over-size stone and number of sand pockets.

Total cost of moving	$162.00
In operation from Sept. 6 to Nov. 15, total number of days worked, 10 hrs. each	56
Total yardage secured	2,036
Average cost per day	$21.00
Average yardage per day	36
Average cost per yard in bins	$0.59

"It will be noted that no depreciation of machinery is figured. The total plant cost is about $2,500. Our experience with washing gravel has been that we can work over a large amount of poor material and secure a good road-building metal at reasonable cost. We cannot compete with good pits located advantageously with this small portable outfit, unless due credit is given for the excellence of the material thus obtained."

Improve Your Highway Guide Posts

Wisconsin Sets a Good Example for Other States and Counties

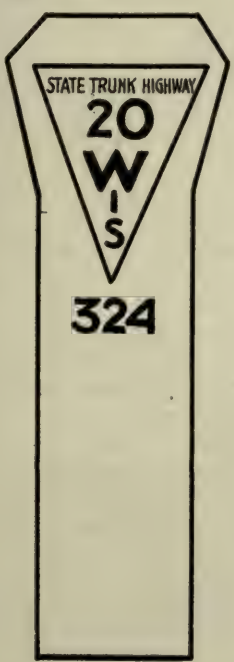
THE need of clear, intelligible signs on our thru roads has been apparent to the public for some time. The old local painted wooden signs that have been installed in the past were in many cases unsightly, difficult to read, and often inaccurate. With state and county highway departments taking up the guide post problem we may hope for more reliable and durable aids in the future. The system of road signs and guide posts adopted by the Wisconsin State Highway Department last year is worthy of consideration and adoption by others.

The basis of the Wisconsin system was the trunk highway law providing that the state highway system must be properly marked and that a map must be published by the commission each year, corresponding to the scheme adopted. In numbering the thru highways, 10 was selected as the lowest number in order to make all markers uniform with two digits; the longest highway across the state was numbered 10, the next longest 11, and so on. Distances along the highways are considered as beginning at the east and south borders and proceeding west and north, respectively. Mile signs are continuous from 1 to the end of the highway, with the exception that signs are omitted within the limits of any city thru which the highway passes. Signs are placed at county lines, at the ends of each patrol section, and direction signs at crossroads and forks. Signs are also placed at railroad crossings, at approaches to schoolhouses and churches where people congregate, at sharp curves and steep grades.

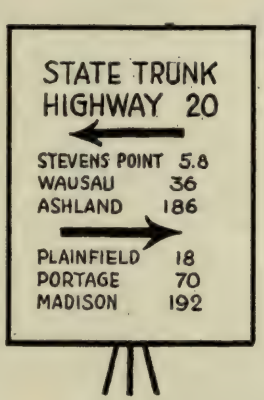
The standard mile marker shown in Fig. 1 consists of a triangle featuring the number of the route and a "W" for Wis-



FIG·2



FIG·1



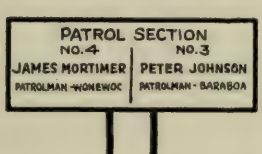
FIG·4



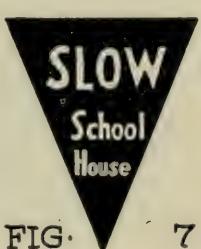
FIG· 5



FIG· 6



FIG·3



FIG· 7

STANDARD WISCONSIN ROAD MARKERS

consin. These markers are chiefly for convenience in keeping track of maintenance work. All markers are placed outside the improved way beyond maintenance limits, with the edge toward the road, making them plainly visible even at night. These signs are also stenciled on telegraph poles and other objects when convenient, as shown in Fig. 2.

The patrol section signs are shown in Fig. 3. These are placed at the ends of each patrol section and give the names of patrolmen. The value of giving the names of patrolmen is great. Those who travel considerably over the highways of states using patrol maintenance appreciate the faithful interest of most patrolmen in their work. A congratulatory word from the traveler is more than amply repaid by the increased interest and diligence displayed by the patrolman. There is a further advantage in this system in that the public knows exactly to whom to go to report defects, washouts and other troubles.

Fig. 4 shows the standard guide-post sign which is placed at intersections and forks and indicates to the traveling public the direction to important towns along the highway. A similar sign is used to indicate distances to important towns not on the state trunk highways system.

The sign shown in Fig. 5 is placed at county lines and gives the name of the county and of the county highway commissioner maintaining the system in each county, thus placing responsibility where it belongs. The post carrying this sign generally carries in addition the patrol sign.

The standard danger signs for railroad crossings, schools, churches, hills and curves are shown in Figs. 6 and 7.

This system of road signs is thoro and simple and can readily be adopted by individual counties in other states not provided with adequate state systems. A complete state highway system with standard markers thruout is much to be preferred, but, lacking this, progressive county highway commissioners can adapt the markers to their needs.

How Shall We Commemorate Their Victory?

By Windsor T. White

TRAVERSING the Campagna di Roma, Italy, is the world's most historic highway. Time and foe have all but blotted out the grandeur of ancient Rome, but the Appian Way, in almost perfect condition, has withstood the ravages of twenty-two centuries. It stands to-day a monument to Roman road-building skill and an endorsement of the part played by good roads in enabling the Roman Empire for so long a time to subdue every would-be conqueror.

France is triumphant to-day because she has long recognized the military value of good roads. In winning the war, summed up by Lord Curzon as a "victory of Allied motors over German railroads," the highways of France were of vital importance. Verdun was saved, the great Somme defense made possible, the Chateau-Thierry victory achieved thru the ability of French roads to carry steadfastly the mighty engines of Mars. And France plans to further her excellent system of highways by building a Sacred Way from Alsace to the North Sea, as a fitting monument to her valiant troops.

We of America are discussing suitable memorials to our fallen and returning troops. Shall such memorials be cold, useless and often unseeming shafts of stone, or useful, educating and health-giving highways—Victory Highways?

More monuments, perhaps, have been erected to the honor of the immortal Lincoln than to any other man. Yet are any of these as beneficial from any standpoint as the great Lincoln highway which bands the continent?

Keep Planning Ahead for Snow Removal

Pennsylvania Pushed Work All Last Summer and Stands Ready to Care for the Worst Storms This Winter

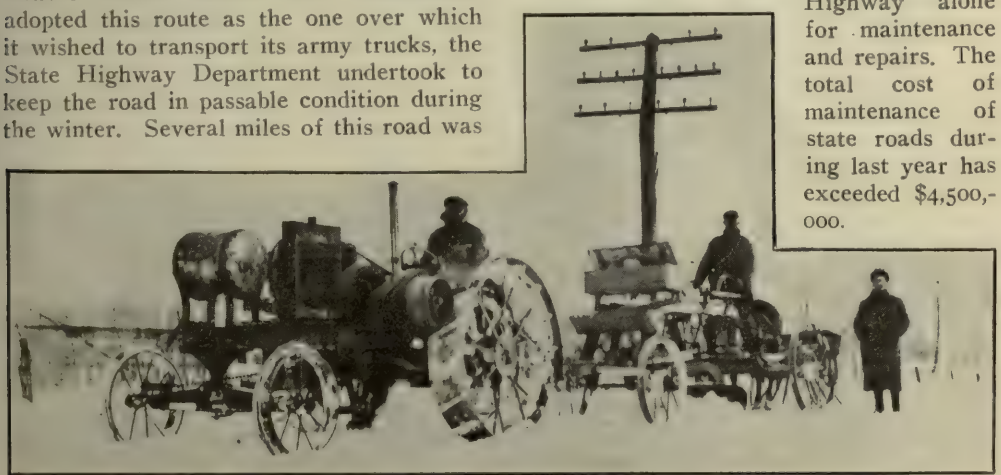
NOTWITHSTANDING the abnormal conditions of this last year, the Pennsylvania State Highway Department awarded contracts for seventy-one sections of road. The roads were located in thirty-three different counties, and practically every one of them is a link in what will be a definite and complete system of roads connecting county-seats and the large industrial centers of the state.

The amount of money involved in the construction was $5,407,678.77; the total number of miles is 150.52. With only one or two exceptions, the local authorities pay half the cost of construction, and in addition Federal aid was secured to the amount of $567,360. The local contributions plus the Federal aid amounted to $2,356,929.01, leaving a balance of $3,050,749.76 to be paid by the state. The types of construction were as follows:

Reinforced and plain concrete	43
Brick on concrete base	18
Water-bound macadam	2
Bituminous macadam	1
Bituminous concrete	2
Asphaltic block	1
Grading and drainage only	4
Total	71

One of the most interesting pieces of war road work was the twelve-mile section of earth road in Beaver County, starting at the Ohio state line and running to Beaver Falls. When the Government adopted this route as the one over which it wished to transport its army trucks, the State Highway Department undertook to keep the road in passable condition during the winter. Several miles of this road was thru a section which was almost a swamp. The Department succeeded in keeping the road open, with the exception of a few days in the spring, and in 1918 it constructed the entire twelve miles of slag, in some locations being compelled to put on two feet of slag before it was possible to get a hard surface. The work was completed by placing a water-bound top on this road early in October, and now trucks or any other traffic can pass from the Ohio line to the New Jersey line over 360 miles of hard-surface road.

Pennsylvania roads have had to bear their full burden of the war, but Pennsylvania was ready at all times to do this. This last year the roads of Pennsylvania have had to bear the burden of more army trucks and more trucks loaded with munitions and supplies than any other state in the Union. There are approximately one thousand miles of road which had to bear intensive war traffic. Many of them were constructed several years ago, and at that time no one ever thought that they would be called upon to carry loads of 10 and 15 tons, therefore the question of maintenance has been a big problem in Pennsylvania. Some idea of how expensive it has been can be conceived from the fact that over $600,000 was spent on the Lincoln Highway alone for maintenance and repairs. The total cost of maintenance of state roads during last year has exceeded $4,500,000.



A TRACTOR AND GRADER IN USE BREAKING THE ROAD FOR THRU MOTOR TRUCK TRAFFIC

In the coal regions thousands of small mines have been opened, and the coal from these mines is delivered to shipping points and industrial centers in wagons and trucks; this has been very hard on roads.

During the winter of 1917-1918, at the request of the National Government, Pennsylvania went at the task of keeping the roads used by Government trucks open during the winter. This was a big problem, particularly thru the mountain sections. The 5-ton state trucks were equipped with snow plows, and snow gangs were formed under the regular road superintendents, who agreed to come out at the first sign of an approaching storm. Notwithstanding that the winter was the most severe and that there was more snow than for many years past, these roads were kept open thru the mountains, and thousands of Government trucks passed thru the state to the seaboard. Many of the men engaged in snow removal worked forty-eight hours at a stretch, with the thermometer below zero. In the dangerous sections of roads sentinels were placed to warn the trucks of snow slides and drifts. These men sent in reports twice each day to the Government Weather Bureau at Pittsburgh, and bulletins were printed in daily papers thru the state, giving the conditions of the roads and the temperatures. This year, in spite of slackening army truck traffic, all important roads are being kept open, additional trucks have been equipped with snow plows, and at certain exposed sections where trouble with drifts occurred last winter, snow fences have been erected.

Motor truck transportation is here to stay. Road-building is just in its infancy, and to-day Pennsylvania is starting on an era of road-building which in a few years will cover the state with a network of hard-surface roads.

Opposition to High Freight Rates on Road Materials

The following joint resolution was introduced by the Ohio Good Roads Federation in the Ohio Legislature in January asking for a reduction in freight for the materials to be used in public improvements:

"Memorializing the President of the United States, the Congress of the United States, and the United States Railroad Administration, relative to the matter of freight rates on materials for public works.

"Whereas, many public improvements for which there is an imperative need have been postponed on account of the existence of a state of war between the United States of America and the Imperial German Government, and in order that the energies of the people might be directed unreservedly towards the winning of the war, and,

"Whereas, one of the greatest problems confronting the state and nation at the present time is the furnishing of immediate employment to a large amount of idle labor released from other activities by the victorious termination of the war, and,

"Whereas, the National Administration has urgently requested the resumption of the construction of public works on a large scale, the Congress of the United States is proposing to appropriate large sums of money for such purpose, the governors of many states have recommended, and are engaged in procuring other large appropriations for the same purpose, and minor political subdivisions are preparing to liberally finance public improvements of great magnitude, and,

"Whereas, in the judgment of the General Assembly of the State of Ohio, the problem of furnishing immediate and profitable employment to idle labor can be best solved by immediately embarking upon the construction of the many much-needed public improvements which have been delayed by war conditions, and,

"Whereas, in the judgment of the General Assembly of the State of Ohio, freight rates on materials designed for use in constructing public works should be immediately reduced, and any increase in the same will defeat its own purposes by enforcing a curtailment of shipments and at the same time by discouraging the movement for a program of public improvements render futile all efforts to give employment to idle labor, and,

"Whereas, one of the greatest and most serious obstacles to the immediate resumption of activity in the construction of public works is the present high freight rates on materials, and more especially certain proposed restrictions and readjustments of such freight rates, which proposed revisions and readjustments create a situation of uncertainty, making it impossible for engineers to intelligently estimate the cost of public works and making it impossible for contractors to bid thereon;

"Now, Therefore, be it Resolved by the General Assembly of the State of Ohio that the President of the United States, the Congress of the United States, and the United States Railroad Administration be, and they are hereby memorialized and respectfully but most urgently requested to take such action as will immediately and effectively prevent any upward revision in the freight rates upon materials entering into the construction of public works, and that, if in the judgment of the proper authorities of the National Government charged with the administration of such matters, the employment of idle labor in the construction of public improvements is a matter of importance and, if, in the judgment of such officials, it be not incompatible with the general welfare, there be, forthwith, made a reduction in the freight rates upon all materials transported over the railroads of the United States for use in connection with the construction of any public improvement carried forward by the Federal Government or any department thereof, or any state, county, township, city, village, school district, or other political subdivision, and, that, upon the passage of this resolution, certified copies thereof be forthwith forwarded by the Secretary of State of the State of Ohio to the President of the United States, the presiding officers and members from Ohio of both branches of the Congress of the United States, and the Director General of Railroads."

Look to the Bridges!

Warning Signs Needed Where Bridges Cannot Stand Modern Motor Truck Traffic



POST YOUR COUNTY BRIDGES LIKE THIS TO PREVENT UNTIMELY ACCIDENTS FROM OVERLOADING

TIMES have changed since that rickety little old wooden bridge with its sign, "Walk Your Horses Over This Bridge," was strong enough for the traffic needs of the rural district. Within the last few years, highway traffic has increased to proportions little imagined at that time. The one- or two-ton horse-drawn load of a few years ago has given place to the five-, ten- and even fifteen-ton motor truck and tractor loads. Not only have traffic needs grown tremendously, but more and more increasingly the railroad is being superseded as a freight carrier by the motor truck.

Some roads have kept pace with this rapid progress and now have permanent concrete pavement that successfully stands up under present-day heavy traffic, but bridges have not everywhere been built or strengthened to live up to the ability of the improved road surface. There are three lines of action open to the road commissioner of any county containing a bridge of the old type: build a new one, strengthen the old one, or guard against accidents by putting up a sign of warning.

The above photograph was taken on a stretch of the seven-mile concrete road in Wayne County, Michigan, where motor-

truck traffic is at its maximum. A warning sign has been posted to advise drivers that loads heavier than six tons are at the driver's risk.

Keep the Tile Drains Open!

MANY highway engineers have been looked upon as cranks when they have continually hammered at their maintenance gangs to keep the tile drains in the roads open. If tile drains are provided and then allowed to become blocked with grass, weeds and roots so that no water can run off, they are as useless as tho they were still piled at the roadside. Maintenance has been preached, drainage has been urged, but the maintenance of drainage has received little notice. No matter how well a road is built, no matter how carefully the drainage system is designed, failure will follow if the drainage system is not constantly inspected and maintained in good working order.

An instance of the value of keeping drains open is told by R. A. Meeker, formerly State Highway Engineer of New Jersey, in *Good Roads*. One day a road official called his attention to a break in a road which had been built under his supervision two years before.

"Look at that," said he, "what good did your underdrains do there?"

"Did the road break at this spot last spring?" was asked.

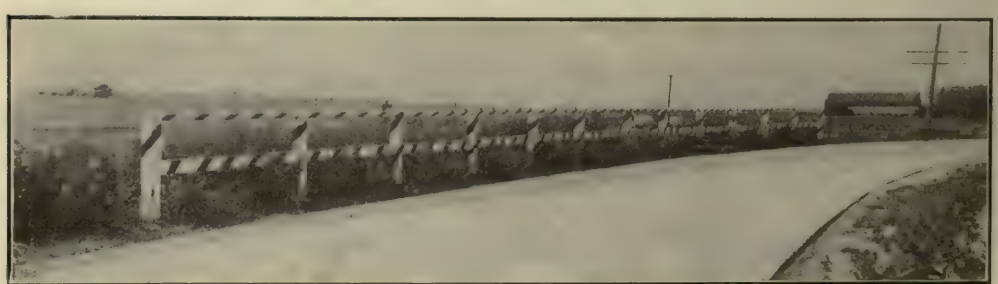
"No," he answered, "but look at it now."

"Very well," said Mr. Meeker, "let us examine the outlet of this drain."

This they did, and found it choked with weeds and dirt so thoroly that not a drop of water was running out. A shovel and a pole were obtained, and the dirt and weeds were removed from the outlet, then the pole was pushed into the drain until the water began to run out. This it did with such force that the drain was soon clear. The next day the drain was visited, and a steady stream of water was seen flowing out. The break in the road was repaired, and for five years afterward the road did not show a break in the foundation, because the same road official who had scoffed at underdrains carefully watched every underdrain outlet under his jurisdiction and insisted that they be kept clear.

Can Your Guard-Rails Be Readily Seen?

THE large number of demolished guard-rails which are seen along state highways are due to two primary causes: first, speeding, and second, the difficulty with which some of the guard-rails are seen against certain backgrounds. Only the law can deal with the first factor, but the second may be dealt with readily by what might be termed the inverse of camouflage, which has been developed in many places at grade crossings where crossing gates have been striped to make them more visible to approaching traffic. The following illustration shows a guard-rail near Chicago which B. O. Barker, County Superintendent of Highways, has had painted to make it more readily visible at a considerable distance.



Rural Fire Protection in California

By M. B. Pratt
Deputy State Forester

FOR years California has lost more standing grain and hay by fire than any other state in the union, the average annual loss being conservatively estimated at $250,000. The hot, dry summers and the prevalence of strong winds make the danger from fire very great, and a general feeling has existed that more or less loss was inevitable and that about all a rancher could do to guard himself was by taking out as much grain insurance as possible.

Last year this feeling underwent a change, due to the realization of the part food was playing in winning the war, and it became evident to everyone that something must be done to stop the fires which ravaged the grain fields. Investigations made of the causes of grain fires determined that from 30 to 50 per cent of all fires were caused by steam tractors, auxiliary engines and other machinery used in harvesting. It was also found that many fires were caused by careless smokers, automobiles and railroad trains. The conclusion was then reached that at least 50 per cent of all grain fires were preventable and that 90 per cent could be controlled with a slight loss if all grain-growers would guard themselves with proper fire-preventive measures.

County boards of supervisors were appealed to, and many grain-growing centers passed ordinances compelling the use of adequate spark-arresters and the carrying of at least two chemical fire extinguishers on harvesting machines. The State Forester is now endeavoring to have these provisions embodied in the portion of the penal code of the state relating to fires, by act of the Legislature.

Appropriations were asked for under a section of the Political Code of California, which authorized the board of supervisors of any county to appropriate an amount not to exceed two cents per hundred dollars on the total assessed valuation of the county for fire prevention and suppression. In this way about $60,000 was appropriated by twenty-two counties of the state, most of which was spent for fire-fighting equipment. Forty counties made



WAGON LOADED WITH FIRE EQUIPMENT, NAPA COUNTY, CAL., RURAL FIRE COMPANY



SOLANO COUNTY, CAL., FIRST DEMONSTRATED THE EFFECTIVE USE OF FIRE EXTINGUISHERS IN FIGHTING GRAIN FIRES

some effort toward adequate protection.

Nearly four hundred rural fire-fighting companies were organized thruout the state. Napa County was one of the first to organize, and its organization can be taken as typical. The county was divided into twenty-three districts, each headed by a captain and an assistant captain, who were appointed fire-wardens by the State Forester, and deputy sheriffs by the Sheriff. The captains formed rural fire companies in their respective districts, consisting of ten firemen who agreed to report to all fire calls within their general vicinity.

Each company was supplied with a trailer or light spring wagon, equipped with one barrel of 50 gallons capacity filled with water, eight buckets, three shovels, three brush axes, twenty-four gunny sacks, one 10-gallon can to hold gunny sacks, one 20-foot rope, one 12-foot ladder, six half-gallon canteens and five 3-gallon chemical fire extinguishers. The county appropriated $1,000 for the purchase of extinguishers. The rest of the equipment was secured thru private subscription and donations.

The duty of the captains was to drill their fire companies in fire-fighting and to have their equipment in good working order at all times. They took charge of such fires as occurred in their districts, investigated their causes, inspected property with reference to fire risk, and reported all violations of the county ordinance regarding the plowing of furrows around grain fields, and the use of fire screens and chemical extinguishers on all gasoline engines used in harvesting grain in the county. Captains reported all fires to the county fire-warden, who reported them to the State Forester.

Stanislaus County supplemented its twenty-seven rural fire companies with motor reserve corps in a number of its cities and towns. The Modesto Corps had thirty-eight automobiles enrolled. When an alarm of ten blasts of the whistle at the fire house was given as a signal that an out-of-town fire had been reported, the members called for equipment, such as fire extinguishers and sacks, and disregarded all speed laws getting to the fire. Machines were dispatched in squads of four by the City Fire Chief until word of the control of the fire was received. The rural fire-fighting companies in the vicinity of the fire were also on the job, and the combined forces of townsmen and farmers did most effective work. Twenty-six fires were fought from June 4 to July 8, and the loss, tho about $44,000, would have been several times this amount had there been no protective organization, as it has since been proved that incendiaries were at work in that section seeking to destroy crops and property.

Rural fire protection in California has come to stay. It is true that wheat, barley and hay valued at more than $268,000 was burned this summer, but had it not been for the efforts of the rural fire-fighting companies the loss would have been several times that amount, since the season was exceptionally dry and there was much incendiarism. It is very evident, however, that the organization can be much improved, and to this end a clearly defined bill has been introduced in the Legislature.

Sanitation in Rural America

By W. Dwight Pierce, Ph. D.
Bureau of Entomology, U. S. Department of Agriculture

NOTWITHSTANDING the great amount of publicity which has been given the Anti-Fly Compaign, one will find thruout our land a rather general disregard of the danger from flies. Certain newspapers keep the subject annually before their readers, but, on the whole, public coöperation is slight. A few cities and communities have definitely organized mosquito control work, and the Public Health Service has done a wonderful amount of work in organizing such efforts. From an entomological standpoint, our nation is not sanitary. The reason lies in the fact that the public does not yet realize that insects can and do carry disease. Science has apparently not put across the idea in such a manner that it has gripped the average person. Until we do this, we cannot expect public coöperation in the attempt to put down insect-spread diseases.

The problems we have to meet may be divided in several different manners. We may separate them into problems of municipalities, towns and villages, and rural communities. We may look at them from the standpoint of the farm, the home, the market, the factory, and the institution. They may be sorted out as problems of drainage, waste disposal, screening, animal control, etc.

Of course we have a greater diversity of entomological control problems in a municipality, but we also have more people who give attention to matters of health in a city, and who would complain against unhealthful conditions. On the other hand, while the problems of the rural community and town are fewer, the insect conditions often become greatly aggravated because of total carelessness as to sanitation. This carelessness in small towns and farms is usually due either to ignorance or lack of organized effort for community betterment.

The field of the sanitary entomologist who desires to tread virgin soil is therefore to solve the ways and means of obtaining better fly and mosquito conditions in rural communities. Educational work must be carried out which will be of such nature that it will bring results. We have the theories and the scientific facts, but we must give the public practical demonstrations that freedom from insect pests means reduced sickness.

Any person informed on this subject who



UNDESIRABLE CONDITIONS CONDUCIVE TO FLY BREEDING
A manure pile covering a large area and having little depth (after Hutchison)

has traveled much in rural sections of this country and seen the unobstructed entrance of myriads of house-flies to the dwellings, especially the kitchens and dining-rooms, and then has stepped outside and within a few feet found the open privies breeding these flies, cannot help but feel a sickening sensation and a revulsion toward eating anything that the flies could have polluted. It is not at all uncommon in rural sections to see babies exposed to the unrestricted visits of flies, and their milk bottles covered with them. The writer has been informed over and over by physicians in small towns that when infantile diarrhea or any other intestinal complaint visits a town, it makes the rounds of every infant in the town, unless perchance, some mother is more advanced in her knowledge of such matters and keeps her baby constantly screened. When typhoid fever and dysentery visits towns with open privies and unscreened houses or hotels, only the more cautious and more resistant escape. Such communities offer every conceivable opportunity for the spread of disease by flies.

The Insanitary Farm

For fifteen years the writer has traveled extensively in rural communities, principally in the Southern States, where insanitary methods, if existent, aggravate disease conditions because of the more favorable climate and the greater number of maladies present. We may picture, therefore, a few of the conditions which have been repeatedly seen in these travels, in order the better to show the problems to be met. We will not claim that these pictures represent the predominant, or the usual, or the average condition. Let it suffice that they exist sufficiently often to make them worthy of serious attention.

The farm we shall describe has been seen countless times. The house has no screens on the windows, in fact, often has no window panes, or may have wooden windows, which are open all day. The house is one-storied, with an outside chimney and an open fireplace. The chimney and fireplace offer excellent day hiding-places for mosquitoes, which are abundant if there is a slough or bayou nearby. The house is built on stumps or pillars raised above the ground. The pigs and chickens, dogs and cats wander freely underneath. The house has a great open hallway thru the middle, separating the bedrooms from the living-rooms. On account of the numerous flea-breeding animals which pass under the house, fleas are not at all uncommon in the house. The well is usually open and built into the back portion of the porch. Mosquitoes breed in it. There is a poorly constructed, dilapidated privy for the women not far from the house, but the men have none, or if they do, it is not fit to enter. They usually defecate in the open, in the fields or draws, or in a woodland patch. The barn is roughly constructed. The manure is piled in a great pile beside the barn, and breeds multitudes of flies. The stable floor is urine- and manure-soaked and affords excellent fly-breeding quarters.

Naturally, I have described the worst common type of farm, because on this must be built the structure for better sanitation in farm life. In many cases a large number of such places may exist on a single large plantation, for the use of the tenants. In such cases a single man is responsible, who himself lives in a house with all modern sanitary conveniences.

The problem of the sanitarian and the sanitary entomologist is to prove to the individual farmer and to the planter landlord the financial value of better sanitation. The planter must be shown that inasmuch as the efficiency hours of his tenants are increased, in proportion will their products be increased, and in like manner his rental, especially where the rental is based on certain proportions of the crop yield. He must see that reduction of mosquitoes means reduction of malaria incidence, that reduction of flies reduces the incidence of typhoid, dysentery, diarrhea, and other intestinal complaints, and that as the sickness rate on the plantation is decreased, the labor output is increased.

How to Improve Your Sanitation

It will do us no good to theorize if we do not set down clearly the way and means of accomplishing this greater farm output by reducing fly and mosquito breeding.

We may state a few measures which should be taken on every farm in order to accomplish greater farm labor efficiency and improve the health of the household and of the animals.

1. *The windows and doors should be*



A MAGGOT TRAP FOR HOUSE-FLY CONTROL

A concrete basin containing water in which fly larvæ are drowned, over which stands a wooden platform on which manure is heaped

screened against flies and mosquitoes. During the months that fires are not used the chimneys should have a screen over the top and the fireplace should be screened. If wire screening cannot be afforded, mosquito bars can be used. In the majority of cases, the expenditure of the necessary amount of money to properly screen the place will be offset by a greater reduction in doctor's bills, for the women and children at least.

2. Where there are many children passing in and out, flies will get in. *The children should be taught to use fly swatters. No flies should ever be allowed to remain in the kitchen and dining-room.* Flies which visit food will deposit on it any disease organisms they have picked up. *If the water is pure, the fly is about the only means of conveying intestinal disease to the family.*

3. Unless the babies and small children are kept indoors in screened rooms the *helpless children should have a mosquito bar over the carriage* or basket, so as to protect them from flies. This is absolutely essential if there is any sickness in the neighborhood.

4. *There should be installed sanitary pit or bucket privies,* such as are recommended by the Public Health Service. Both men and women should be provided with these, and it should be a rule of every farm that indiscriminate defecation is absolutely forbidden. As many farms are quite large, the most feasible plan would be to place at various places over the farm where they would be most convenient and best protected, some type of latrine, such as is used by armies, or, better still, a permanent privy.

5. *The well should be kept covered* to prevent, as far as possible, mosquito breeding and contamination.

6. *The foundations of the house should be boarded up* to prevent the access of animals and to eliminate a favorite mosquito hiding-place. The ground around the house should be so drained that water will not flow under the house except in case of heavy rains, and in such cases will quickly drain off from under the house.

7. *All ditches, ponds and streams, and bayous on the farm should have the banks kept clear of obstructions to the free flow of the water.* There should not be any tree stumps, trees, roots, weeds, or logs in the stream. The banks should not have overhanging ledges, or puddle pits. Permanent ponds and lakes might be stocked with mosquito-eating fish. Places which habitually form puddles after rains should be filled or drained.

8. *The barns should have hard-packed dirt floors or cement floors.* All manure should be removed daily from the barn. If possible, the manure should be spread while fresh on fields lying fallow. Otherwise the

manure should be piled in tight-packed stacks or on platforms over a cement basin containing water, in order to drown the fly larvæ migrating for pupation.

9. *The garbage should be fed to pigs, preferably in sanitary feeding stalls.*

The Insanitary Town

In the same travels in which so many insanitary farms were seen, the writer has sojourned in or passed thru many towns which might be described as follows: The streets are unpaved and are littered from one end to the other with papers, cans, and the accumulation of months of manure droppings, and are altogether filthy and unattractive. The removal of trash is nobody's business. The grocery stores and meat markets are unscreened and have open doors. The food is covered with flies. Farmers drive up and buy a side of salt pork or other meat, throw it into the pit of their wagon, uncovered, and drive down the dusty road, with a swarm of flies hovering over the meat. The small lunch rooms, where the visiting farmer eats his noon or evening repast, are dirty and full of flies. The stores have privies in the rear which are filthy and an offense to any decent person. Flies abound. Chickens and pigs wander unrestricted thru the streets and are often found feeding under the privies. The hotel dining-rooms and kitchens are always full of flies and are usually but a short distance from filthy privies, and flies are constantly passing back and forth. The bedding is often unclean and often has been slept in by someone else. Bedbugs are not uncommon. The water pitchers contain mosquito wrigglers. The cisterns behind the houses are unscreened and contain rain water full of mosquitoes. The livery stable has great piles of manure in the stable yard, and sometimes right out on the sidewalk.

Sometimes the town is a little bigger and the people have become more civilized and installed interior plumbing, which empties the sewage into a ditch which runs down to a stream, from which cattle drink, and quite often this sewage empties in to the gutter on the street and fills the air with filthy odors.

These small towns are often rat-infested, and one can easily see the danger should an outbreak of plague, which is transmitted by the rat flea, get a start in such a town, by the advent of a plague-infested rat.

How to Improve Town Sanitation

1. Organize the community for better sanitation, and call in an expert of the Public Health Service, which is giving a great deal of attention to coöperative health work.

2. Conduct a health publicity campaign.

3. Teach better sanitation in the schools and organize the children for clean-up work.

4. Require the screening of all stores selling food, and of all hotels and restaurants dispensing food. Do not allow food to be handled in such a way that it will attract great quantities of flies.

5. Require private stables to place manure in fly-tight boxes and to have same removed every seven to ten days.

6. Require livery stables to remove all accumulations of manure daily from the town limits.

7. Require the burning, feeding or removal of all garbage twice a week from homes and daily from hotels.

8. If garbage is hauled away and dumped, the town should arrange for its daily incineration.

9. Require thruout the town limits, depending upon conditions, either sanitary plumbing and sewer connection, or sanitary box or pail privies. Do not allow pit privies or unsanitary ones of any type. Do away as soon as possible with open sewer drainage, installing sewer pipe. Install sewage septic tanks of size adequate for the town. If there are no sewers laid, it may be possible to arrange for individual installation of simple septic tanks.

10. Do not allow pigs and chickens to have access to privies.

11. Do not permit general roving of pigs, stock, chickens, etc., on the town streets.

12. Keep all ditches and waterways in the town free of obstruction, and if mosquitoes are breeding, have an oiling squad.

13. Fix strict penalties against defecation on streets, alleys, and vacant lots.

14. Install a town comfort station for strangers and people from the country.

Freeing the Last Toll Road On the Lincoln Highway

TO the traveler who wends his way westward via the Lincoln Highway across the state of Pennsylvania, no more attractive vistas appear than those seen while crossing Lancaster County, with its hundreds of fine farms unsurpassed anywhere for fertility and general improvements, denoting thrift and prosperity. Thousands who take this drive have until recently, however, had the annoyance of being called upon to pay toll at gate after gate after passing within the borders of this county. But all the roads are free now, and the last toll gate on the Lincoln Highway has disappeared. A battle for free roads has been fought and won.



TAKING THE TAX OUT OF TRUCKING AND TOURING

When the agitation for free roads began, Lancaster County had many miles of pikes within its borders under ownership of various companies. Those hard, firm roads had helped wonderfully in making Lancaster County a valuable farming center, and the farmers did not propose either to lose them or to give them away. They had built them, they still owned them largely, and they raised the slogan, "Let the ones that use the good roads pay to maintain them." Hard pressure was brought to bear to free at least the Lincoln Highway, but the farmers replied, "If you free any, you must free all. We are not willing to be taxed to give free roads to the automobilist and still pay toll on the pikes we use."

Three years ago the battle reached its climax. D. F. Magee, a lawyer of Lancaster, was nominated for County Commissioner mainly on a "free roads" platform. Nearly all of the business men of Lancaster County were for him, as were also the more progressive farmers. He won. Then came the fight to win over the other two Commissioners. A Free Roads League was formed, mainly from the membership of the Automobile Club and the Chamber of Commerce. More than twenty thousand voters out of a poll of about twenty-eight thousand signed petitions praying the County Commissioners for free roads. At a great public meeting held in the Court House, these petitions were received by Mr. Magee on behalf of the Commissioners. The other two Commissioners finally yielded, and agreed to join with Mr. Magee in freeing four of the toll roads of Lancaster County, the state paying one-half of the cost and the county the other half.

Negotiations were immediately opened thru J. Denny O'Neil, the present State Highway Commissioner, for the purchase of the pikes. These included the Williams-

town Turnpike and the Lancaster and Susquehanna Turnpike, the two being practically one continuous road and covering the Pennsylvania section of Lincoln Highway entire, and two others,—the Elizabethtown Pike and the Manheim Pike. After months of negotiation the Williamstown Pike was bought for $90,000, the Elizabethtown Pike for $80,000, and the Manheim Pike for $35,000. The Williamstown Pike was freed first, and the ceremonies of taking down the toll signs and removing the gates took place on April 12, 1918, amid the great rejoicing of those who had been most active in the campaign to accomplish this end. To Mr. Magee, County Commissioner, was given the honor of taking down the toll signs and nailing up the sign, "Pay No Toll. This Pike is Free," in recognition of his untiring efforts to this end.

However, the Lancaster and Susquehanna Pike still withstood the demand, and along its length five toll gates were still standing. The Conestoga Traction Company had a lease of the franchises of this pike for ninety-nine years. It was profitable and they declined to give it up. Legal proceedings were instituted to try to force a sale. Both county and state stood ready with their money to buy at a fair price. Eventually a compromise was effected, and the price, $80,000, was paid on September 5, 1918. On the afternoon of that beautiful, sunshiny autumn day the last toll gate was removed with fitting and joyous ceremonies.

Keep Out Rats

Rats Are Disease Bearers and Destructive Agents

The rat-proofing of premises is highly desirable, both for sanitary and for economic reasons, and should be employed especially in communities along the seaboard, on account of the possible introduction of bubonic plague at such points. Rat-proofing serves the double purpose of eliminating rat harborage and of the protection of food supplies from the depredations of rodents. To eliminate rat harborage, residential buildings should be elevated from one to three feet, according to the dimensions of the building, with underpinning free and the space beneath the building kept clear of loose materials; or the foundation wall at the edge of the building should fit the floor closely and extend two feet into the ground.

If rat-proofing is accomplished by elevation, it is especially necessary to prevent access of rats to double walls. This is done by obliterating hollow space with a concrete fill or with bricks extending one foot upward from the floor.

Buildings where foodstuffs are prepared or stored in considerable quantities require measures not only for the prevention of the harborage of rats but also for the prevention of their temporary incursion in search of food. In this class of structures it is preferable that the floor be of concrete, protected on all sides at the edge by a wall extending two feet under the ground, to prevent rats burrowing under the edge of the concrete. Hollow wall or ceiling space should be avoided in these structures. The walls should be of solid masonry, brick or concrete, but if of frame the entrance to the space should be protected by a brick or concrete fill extending from the floor upward one foot.

To prevent the admission of various species of climbing rats, ventilators, drains and other similar openings should be screened with durable material, preferably not less than 12-gauge wire, mesh not exceeding ½-inch. The premises should be kept free of loose material which might serve as a harborage for rats. This applies especially to loose lumber, barrels, boxes, etc. If retained on the premises, such articles should be elevated not less than two feet from the ground. Plank walks are favorite harboring places for rats, and should be avoided, the necessary walks being made of concrete or brick.

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Public Works and Employment

WHICH SHALL IT BE?

Bread Lines and Bolshevism

The American people are facing to-day the greatest economic crisis in their history.

When the armistice was signed in November, we had some four million men under arms, and perhaps twice that number in war industries.

To-day our factory whistles are blowing noisy salutes to the returning heroes —but the same whistles have no welcome for hundreds of thousands who are vainly seeking employment.

If the war had gone on, we would have raised tens of billions in bonds and taxes this year for works of destruction—and the country would have continued industrially prosperous.

Now that the fighting is over, shall the nation which turned the tide of a world war be impotent to meet the problems of peace?

Shall we fail to realize that our governmental agencies have it wholly within their power to give our demobilized soldiers and workers opportunity for constructive activities —and to make the nation permanently prosperous?

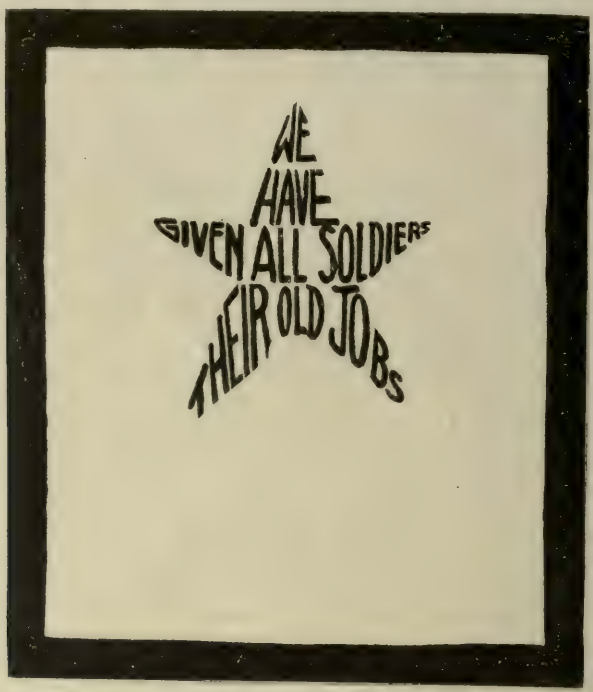
We did not hesitate to spend untold treasure to save Europe from the autocracy which breeds oppression. Shall we now fail to save America from the hunger which breeds Bolshevism?

Shall we, for fear of increased tax rates, allow stagnation of industry to reduce the sum total of wealth from which all taxes must be paid?

Or shall we plan an unprecedented program of public works, boldly conceived and promptly executed—a program by which our national, state, county and municipal governments shall provide temporary employment for all whom industry and agriculture cannot otherwise absorb—a program which shall create not works of destruction, but permanent assets to promote our happiness and prosperity for all time to come?

Shall we rise to our great opportunity?

Is Your City Flying the Peace Service Flag?



Drawn by Fitzpatrick for The St. Louis Post-Dispatch

During the war most industries have proudly displayed service flags showing the number of their employes who had joined the colors.

Now that the men are coming home, how many industries can display the peace-time service flag reproduced above?

Some employers who have prospered during the war are able to re-employ all their former men who want jobs without discharging others who have taken their places. It may mean, possibly, during the next few months, the paying out of some accumulated war profits—but to what better use could war profits be put?

To many employers, however, the present industrial crisis has brought the necessity—much against their wishes—of reducing their working forces and of being unable to offer jobs to returning soldiers who need work more than they need parades.

To such employers—as individuals and thru their commercial and civic organizations—THE AMERICAN CITY urges coöperation with governmental agencies in planning the biggest program of public works ever undertaken, and in the immediate placing of orders for machinery, supplies and construction.

This done, many more employers will be able to display the new service flag and, by preventing a serious industrial crisis, help to keep the world safe for democracy.

Many Cities Plan Public Works to Relieve Unemployment

EDITORIAL NOTE.—*During the war municipal governments rendered signal service to the nation in refraining from public works, thus releasing materials and man power for military purposes. During the period of demobilization, municipalities can render a service of perhaps even greater importance by engaging in public works on a big scale,—such as the construction or improvement of streets, of water, sewerage, lighting and transportation systems, of parks, playgrounds and public buildings,—thus preventing an industrial panic which may cause the Bolshevist to become a more serious menace to America than ever was the Hun.*

Federal aid in meeting this crisis has been proposed. On January 21, Senator Kenyon presented to Congress a bill "to provide for the commencement or prosecution of public works in order to provide increased opportunities for employment during the period of demobilization and industrial readjustment, and for other purposes." By this bill a United States Emergency Public Works Board is created which shall control the expenditure of an emergency public works fund of $100,000,000, or less, to assist states, counties, municipalities, or other political subdivisions, in conducting public works which will relieve unemployment. All applications for this assistance must be made thru the state.

For example, let us suppose that a town in Connecticut has a large surplus of labor and an important building program of public works which waits the sale of a bond issue before it can go forward. In many cases bond issues take six to eight months or a referendum before they can be legally sold. Under Senator Kenyon's bill the state of Connecticut can obtain an advance from the United States Emergency Public Works Board, to be lent to this city at once; the work can be begun without delay, and the Federal Government can be repaid when the bond issue is sold. It is hoped that this bill will receive sufficient support to insure its passage.

As long ago as May, 1916, THE AMERICAN CITY began urging the preparation of plans for public works to be started in American cities when the fighting in Europe should stop. On the cover of the December, 1918, issue was published an urgent appeal from the Department of Labor to the same effect. To this appeal hundreds of replies have been received by the Department. Last month several pages were devoted to inspiring programs from a number of cities—the work of city planning commissions, municipal governments, chambers of commerce and city clubs. On the following pages will be found further evidence of a movement, not yet sufficiently general, for cities to do their bit in a big way in the present crisis. The cities are awake—some of them—but few of them are yet awake enough.

AT the mid-winter Conference of Mayors and Other City Officials of the State of New York, held in Albany January 22, 1919, a report was presented by Mayor Mark I. Koon, of Auburn, N. Y., chairman of a committee appointed at the June Conference to study what New York State cities can do to help in the after-war economic rehabilitation. From this report some interesting information has been extracted:

When the committee was appointed, it was the consensus of opinion that it would have all the year in which to make its study. The enemy of democracy, however, collapsed much sooner than was expected. As a result, America has had to face about and tackle readjustment problems at a much earlier date than it had expected. As soon as the armistice had been signed, therefore, the chairman of this committee requested the State Bureau of Municipal Information to seek the opinion and advice of the mayors of American cities about the work that municipalities should and can do to assist the nation and the state in a return to a peace basis.

From the replies received, some representative reports have been selected. In its letter to the Mayors, the Bureau first asked what municipal readjustment plans the city had adopted or was considering. The second inquiry was as follows: "What, in your opinion, can and should American cities do to assist the nation and the state in their readjustment work?"

The following opinions indicate what some American city officials believe municipalities should do to assist the nation and the state in a return to a peace basis:

City Manager W. C. Bailey, San Jose, Cal.—I thoroly believe that all possible work should be provided at this time so that we can absorb all unoccupied labor.

Mayor Frederick W. Donnelly, Trenton, N. J.—I believe it is highly essential from an economic standpoint that as much public work be released as is possible within the next few months, during the time that the country is passing from a state of abnormal war-work employment to normal business and industrial conditions. In order that there may be plenty of employment during this interim of readjustment, I believe that the cities, the various states, and the Federal Government itself should give impetus to as much public construction work as is possible.

Mayor A. P. Wooldridge, Austin, Tex.—My opinion is that the municipalities of the country should start and carry out as many public works improvements during the next few years as their needs urgently require and as they can advantageously finance.

City Engineer W. Earl Weller, Binghamton, N. Y.—It is my opinion that the cities should assist the

state and the Federal Government in taking up the slack which is bound to come in the labor situation. This assistance can be most advantageously given by proceeding with public works.

Mayor C. M. Littleton, Davenport, Iowa.—I am in favor of going so far as to bond the city in order to furnish work for workingmen during this period of reconstruction. . . . . It is our duty to see that the men have jobs, and this is the only way that the city can do it.

Mayor Walter R. Stone, Syracuse, N. Y.—I think the municipalities should proceed as soon as possible with all of the work deferred in the past two years.

Mayor Palmer Canfield, Jr., Kingston, N. Y.—It is my opinion that cities can assist in the reconstruction work by carrying on to the fullest extent the character of the work above outlined [public work] and also by the maintenance of real public markets where farm and poultry produce will be received and paid for at market prices, which will tend to cause the farming districts to be developed to a greater extent and will also cause unused farm lands to be utilized.

Mayor Charles M. Fassett, Spokane, Wash.—While I feel that the great civic progress which will come from the successful close of the war must be largely the result of national rather than of municipal activities, yet I am sure that municipalities can do a great deal, largely along the line of city planning proposals, which most cities have been considering for some time.

Almost every city reports plans to proceed with construction work postponed on account of the war, and many will initiate and make new public improvements. Many cities are preparing to erect memorials, and it is noticeable that most of these will be memorials of a substantial character that will perpetuate not only the deeds of our heroes, but also the ideals for which they fought.

Another important part which American cities are planning to take in the solution of readjustment problems is the work of the social welfare director. The problems of food supply, transportation, health, public safety, housing and education are also included in the programs of several cities. There is every indication that the greatest progress in their history will be made by American cities in the next few years.

Following are some of the larger undertakings which cities either have already decided to carry out or are considering, and which have been reported to the War Labor Policies Board or the New York State Bureau of Municipal Information. Many smaller places also are taking a proportionate share in the responsibilities of this critical time.

Denver, Colo.—$610,000 for water-works extension; $1,000,000 for a general hospital.

Louisville, Ky.—$400,000 for public buildings; $700,000 for streets and sewers; $100,000 for a river terminal.

Monroe, La.—Public buildings, $40,000; streets and sewers, $140,000; municipal utilities, $320,000.

Boston, Mass.—$2,650,000 for streets and sewers; $400,000 for public buildings; $325,000 for parks and playgrounds.

Scranton, Pa.—Streets and sewers, $232,738; public buildings, $32,350.

Wichita Falls, Tex.—$344,000 for paving; $250,000 for schools; $60,000 for sewers.

San Francisco, Cal.—The city will spend $250,000 to improve the Hetch Hetchy water-supply and power system and the municipal railway; $500,000 is to be spent on unpaved and unaccepted streets; $3,000,000 for school and civic center buildings; and $500,000 o service construction.

Harrisburg, Pa.—Park development; construction o bridge over railroad tracks; erection of million-dolla memorial bridge; subway improvement.

Wheeling, W. Va.—Install a filtration plant; buil bridge and improve streets.

Canton, Ohio.—Increase water-supply and distribu tion system; build two main trunk sewers; improv streets.

Fort Wayne, Ind.—Develop three new parks; trac elevation work; pave many streets; build sidewalk and sewers.

Seattle, Wash.—Build a hydro-electro power plan an addition to the water system, and many street im provements.

Cleveland, Ohio.—Construction of reservoir, filtra tion plant and pumping station; installation of wate mains; extension of light and heat; new bath house recreation pier, wholesale farmers' market and ware house, swimming pools; waterway improvements; dance hall, boat houses, golf club houses; a cit park; paving and sewering; garbage collection sul stations; straightening of river; enlarging city ho pital and tuberculosis sanitarium; construction children's tuberculosis division and girls' home at cit farm; enlargement of correction farm; constructio of civic center; new engine houses.

Syracuse, N. Y.—New schoolhouses; improvemer of sewer system; new street pavements; creek im provement; sewage disposal plant.

Buffalo, N. Y.—New intermediate school building and municipal office building; municipal ownership railway system; creek improvements; construction sewers; street construction and reconstruction; co struction of docks and dock wall, bridges, viaduct boulevard and roadway; river improvement; improv ment of water system; electrification of street lightin street widening; street car facilities; comfort statio filtration plant; by-product oven for production of ga

Cedar Rapids, Iowa.—River front improvemen construct large concrete bridge; resurface street suitable memorial for soldiers.

Dayton, Ohio.—Will spend $860,000 for street an sewer improvements and water-works extension; ma call special election to vote on $2,000,000 bond issu for public improvements.

Trenton, N. J.—Complete tuberculosis and gener hospital and erect venereal hospital and clinic hea quarters; erect municipal sanitary station and publ comfort station; complete municipal dock; construc warehouse and other structures co-related with Del ware River deepening project; acquire ground for pu lic market center; erect soldiers' memorial; extend an improve public park system; motorize fire departmen extend lighting system; extend sewers; repair an pave streets; extend water system.

St. Louis, Mo.—Street paving; sewer construction bridges and viaducts; grade crossing elimination parks and playgrounds; memorial municipal aud torium and convention hall; bond issue of $22,000,0 asked for for the work.

Oneonta, N. Y.—Thoro and systematic study progressive city planning with well-defined objectiv in view. This will include city government and ci improvements, such as permanent street improvement park development with recreation features, industri advancement, sanitary housing and sewage disposal.

Davenport, Iowa.—Extensive program for street pa ing and grading.

An interesting feature of the metho employed in getting at every possible sour of assistance is shown in recent correspo dence between the War Labor Polici Board and Dr. John Nolen, landscape arch tect, of Cambridge, Mass. On January Felix Frankfurter, Assistant to the Secr tary of the War Labor Policies Boar wrote from Washington to Dr. Nolen follows:

"It is the policy of the Government, as outined in the President's message, to expand ublic works during the period of demobiliza-ion and transition. The public works of ities lend themselves particularly well to this urpose. The Department of Labor is anxious o assemble all city plans which are far enough dvanced at this time to afford an opportunity f some development during 1919. Conse-uently I am writing you for assistance. In articular, I would like to have any plans hich you yourself have been responsible for, nd the names of the persons in that city who ould be interested and effective in pushing hese plans into execution at this time."

To this, Dr. Nolen replied in part:

"The policy of the Government to encour-ge the construction of necessary public work luring the period of demobilization and transi-ion to a peace basis is eminently sound. For number of reasons I feel sure that the public orks of towns and cities will lend themselves articularly well to this policy. These towns nd cities are distributed all over the country. heir public improvement calls for all classes f labor. Moreover, the public works them-elves are of a character not only to furnish ork during a critical transition period, but hen finished these improvements will render all forms of industry more efficient and wage-earners more contented. The improvements which I have in mind embrace railroad development of all kinds (including in some instances much-needed union stations); streets (especially the main thorofares); public parks, playgrounds and other open spaces; schools, city buildings and civic centers; also a better class of homes for workmen, which even if not directly paid for by public funds are of a semi-public character and directly related to public welfare."

By carrying out as many public improvements as their needs require and they can advantageously finance, cities can help greatly to prevent unemployment while our industries are readjusting themselves to peace conditions. In planning these improvements, however, every city administration should bear in mind the advice of the Mayor of Spokane:

"Every city should see to it that the new time shall mean better living conditions for its citizens, and make an earnest and unselfish effort to promote the health, happiness and well-being of its citizens."

The Great Opportunity for City Planning

By Myron H. West
President, American Park Builders

NOT in fifty years has there been a more psychological time to strike a blow for better cities than now. Public opinion, the great potential force of American life, is aroused. We are not like the nations of Europe, war-weary and exhausted, but are keen and at the pinnacle of our strength. There is being exercised, as never before, thought and consideration for public affairs. There is a spirit of generosity, there is a crystallized and active patriotism, there is unbounded energy. Nowhere the country over can be found the spirit of lethargy that was once to be observed. We all are now thinking of government—of better government for those countries for which we have been fighting—and it is but a step to bring about the same consideration concerning our local governments. This movement in behalf of our cities has been growing. It was taking form before our war broke out. The grey wolves were being driven to their lairs. The commission form of government had been tried out. Better men were being voted into councils, and the trained city manager, the last word in municipal operation, is now an assured fact. This, as we see it, is the condition at present, and it forebodes nothing but good for the period of doubt,—the reconstruction period which is now at hand.

The Need of a City Plan

It is important during this period of uncertainty that we have for our cities a plan. If things go badly, if industries are stopped, then we shall be prepared to divert our man power to the construction of public works, that we may have no bread lines, and that street paving, sewer and water lines, lighting, tree planting, public buildings, parks, and the multitude of other things which have waited during these years while the cities have grown out beyond the old improvements, may be carried out. On the other hand, if there is to be no period of hard times following the war, if our cities are to go ahead faster than ever, there should surely be a plan. The city that

grows fast unguided makes mistakes the more rapidly and the more numerously. But we will conclude that he of the conservative school is right,—that the country is neither "going to the dogs" after the war nor are newsboys going to be made millionaires in a day. We conclude that barring slight fluctuations the curve of progress will be ever upward, forced upward by the careful and sagacious planning of an intelligent working majority. Granting this, it would seem that as a matter of course we would plan competently, sanely and with a large degree of definiteness for our cities. In any case, whether the optimist, the pessimist or the conservative is right in his predictions, the city plan is seen to be essential for progress.

If a business enterprise is worthy of planning for, if a house is worthy of an architect's consideration, if a political campaign is worthy of a plan, surely a city is! A city is a corporation of consequence. It represents tremendous investment of wealth and labor. It represents the health and happiness of all living therein, and it represents untold influences and benefits to posterity. The wise city will lose no time in planning a comprehensive program of municipal development.

The Meaning of City Planning

What is good city planning? City plans were once thought of simply as schemes for beautification, principally as applied in elaborated form to limited areas within an existing city. But city planning extends far beyond this. The plan or program of advancement should have for its first consideration the further improvement and safeguarding of the city government itself. It should then consider the development of the city's industries, the encouraging of new industries to which the city is especially adapted, and the working conditions. It should consider the extension of the city's scope of influence; the matter of advertising to place the city in a better position toward competition; its influence with respect to neighboring population centers, and especially with regard to its relation with the surrounding country and the farmers living therein. It should consider the city's needs as to railroads, interurban lines and trunk highways. The program should include the improvement and standardization of municipal utilities—such schools, police and fire protection, recr tion, street lighting, paving and planti art and libraries—that these may be as g in kind as the city can afford. All this city planning.

Some of the cities in Europe which day lie in ruins had for fifty years follow such plans as outlined above, and s there may be sent from our own foundr and works materials to rebuild these cit better than ever before. It is unthinka that we who shall contribute to this w shall not give like consideration to our o cities.

The Value of a City Plan

Of course it must not be assumed t the city plan is the panacea for all the cit ills. No city plan can possibly be develop which will meet all needs or stand the t of time without the necessity of being i proved to meet changing conditions. C planners are human and the profession new. Many planners, altho enthusias and serious, have approached their cho work from fixed angles. Architects their problems in one way, engineers in a other, landscape artists in another. O in the last few years have courses in c planning been given in our universities, a in most cases the instructors in these ha been largely self-taught. Even tho the c planners were all beneficiaries of hig specialized training, they would make m takes, as do physicians, lawyers, architec and all the other professional men. E tho the plan procured is faulty, tho its r ommendations in some cases overreach, are illogical, a poor plan is better th none, for it gives a basis upon which work. Changes found necessary may made, and there will at least be a gene scheme showing the relation of th changes to the structure as a whole. matters not what size the city is,—wheth it has a population of five hundred, f thousand or five hundred thousand,—it to-day but the nucleus of what it will be years to come; and the crudest of schem for its future growth will be better than let the city go on unguided, led only by dividual and spasmodic effort.

Editorial Note.—The foregoing article has b prepared from an address on "City Planning A the War," delivered at the Fifth Convention of City Managers' Association at Roanoke, Va.

Chamber of Commerce Buildings—Their Uses and Possibilities

The First Instalment of a Series of Items on the Homes of Commercial Organizations, with Descriptions of Their Club Facilities and Their Uses as Community Centers

The chamber of commerce is a peace agency. Before the war, it was concerned with the building of good roads, the paving of streets, the planning of cities, the development of industry and the promotion of trade. In working for these common community benefits, commercial organizations also developed a fellowship and a team spirit among business men that was perhaps even more important than the material achievements. It was the existence of this civic fellowship that made the commercial organization so effective in war—that made it possible for America to astound the world by the speed with which she made ready to strike decisive blows.

Now that the war is over, the chamber of commerce returns to its former labors, but with an added strength and prestige that make it more effective than it has ever been. Its first concern must be to preserve and foster the "over the top" spirit of its war work. The community that gladly contributed $100,000 for Red Cross work in Europe, without missing it, must not be permitted to remain content with living conditions that will breed a war in our own land. The habit of giving and working unselfishly for the welfare of mankind must not cease to be a habit.

This symposium on chamber of commerce buildings suggests, by the descriptions of the buildings, how civic fellowship has been developed. It shows how the organizations mentioned, thru their club rooms and luncheon facilities, bring men together and promote their acquaintance and friendship. By combining gastronomics with economics, there is no question that the latter receives more attention than it otherwise would. And where music and singing are interspersed with the luncheon-meeting, there is but little doubt that digestion is improved.

There is one major fault with the plan generally followed in financing these buildings, and that is the investment feature. It is comparatively an easy matter to finance a chamber of commerce home by the sale of interest-bearing bonds or stocks; the maintenance of the building and the payment of interest and taxes from the dues of members are not so simple. More than one of the organizations owning buildings described in the symposium are groaning under a burden of fixed charges that seriously curtails the working program.

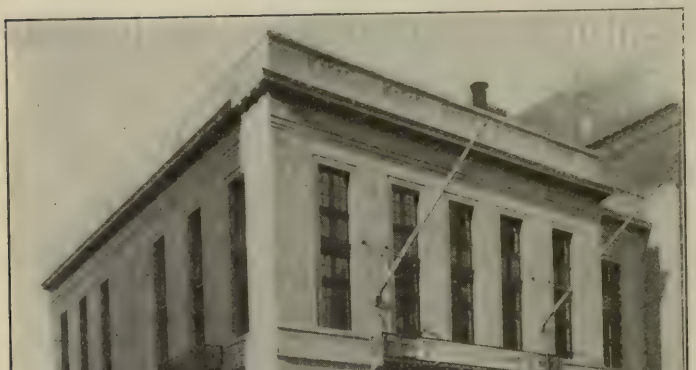
However costly these buildings have been to maintain, there is no doubt of their value. They give the chamber of commerce a stability and a permanence that is difficult to maintain in a mere office building or vacant store atmosphere. They do for the chamber of commerce just what the Y. M. C. A. buildings and the Masonic Temples have done for those organizations.

The modern chamber of commerce is a community necessity, and it should become a community institution. As such, it ought to have a home like those described here—a home that is a civic center for the community and a meeting-place for all public-minded citizens. Instead of providing such a structure with bonds and mortgage, it ought to be financed as is a church, by outright gifts, and dedicated in perpetuity to community advance.

ROCHESTER, N. Y.—In September, 1917, the Rochester Chamber of Commerce moved into the fine new home provided for its use by one of its trustees, George Eastman, of the Eastman Kodak Company. The expense of the furnishings and equipment was met by subscriptions of the Chamber's members and the maintenance is taken care of in the same manner. The building, with its furnishings and equipment, represents an outlay of approximately $700,000. The Chamber's principal source of revenue is the dues of its members.

No portion of the building is rented; it is used entirely by the Chamber of Commerce for its various activities. On the lower floor is the spacious Chamber room, measuring 63 x 108 feet. This room is divided by a row of square pillars which make a central space 30 feet wide and 24 feet high and two side aisles about 15 feet wide. Half of the central section of the Chamber room is devoted to social and recreational uses. The entire rear half is fitted up as a restaurant, to accommodate the daily influx at the luncheon hour. At the left of the lofty, marble-lined entrance vestibule on this floor is a waiting-room or lounge, which contains a fireplace and book-shelves. The individual offices of the various secretaries are also on this floor. They include the offices of the Secretary, the assistant Secretaries, and the Traffic Industrial Manager. The dining-room in the Chamber room is connected by a stairway to the mezzanine floor, where meals are served to the various committees which meet for lunch. The south mezzanine is given over entirely to the stenographic and departmental forces. Directly behind it are coat rooms and lavatories. Stairs lead from the vestibule to the banquet hall on the second floor, which will seat 1,000 persons at dinner. Leading off from one of the two landings on the stairway is a conference room, beautifully furnished as a memorial to Benjamin F. Chase, treasurer of the Chamber for twenty-two years. The assembly-room is also on the second floor; it is of the same dimensions as the Chamber room and will accommodate 1,100 persons. The room has a long, low stage, and a broad gallery extends around its three sides.

The kitchen occupies the rear of the basement and is connected with a serving-room on every floor by means of dumb waiters. The walls of the kitchen are of white enameled brick and the floors are of composition tile. The ventilation and drainage are of the most modern type. In connection with the kitchen is a large bakery and ice cream room. The basement also contains cold storage rooms and refrigerators, a servants' dining-room, coat and toilet rooms, an office for the steward and one for the engineer, besides the heating and power plant. There are also a vacuum cleaner and a garbage incinerator and such other me-



THE HOME OF THE CHAMBER OF COMMERCE IN ROCHESTER, N. Y.

chanical conveniences as go to make up the equipment of a building of this character.

The building is provided with every facility for making the social and club life of the members all that they could desire. The lounge contains a nook where there are comfortable chairs, and tables provided with an abundance of reading matter, and the restaurant is well equipped for this purpose.

Several small groups representing a variety of interests hold their meetings in the building and it is always available for patriotic undertakings or for enterprises of large public interest.

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INDIANAPOLIS, IND.—The building occupied by the Indianapolis Chamber of Commerce was erected at a cost of $210,000, $50,000 of which was spent for the land, $140,000 for the building and $20,000 for furniture and equipment. The money with which to finance the project was borrowed from the Equitable Life Insurance Company, of New York, and a stock company was formed. The stock was divided into $10 shares and was sold to the original members of the Chamber, who took from ten to a hundred shares each. The holding of stock in the building enterprise gives the member an equity in the building. He may take a $10 share of stock instead of paying the initiation fee of that amount, if he chooses. If he resigns his membership in the Chamber, he must surrender his stock.

The building contains eight stories. The Chamber of Commerce occupies the sixth, seventh and eighth floors, covering approximately 6,500 feet of space, divided into the following separate rooms: the offices of the General Secretary, the Assistant General Secretary, the General Secretary's private stenographer, the Assistant Secretary, the Cashier, the Freight and Traffic Bureau, the War Contra Department, the Bureau Governmental Research, t Bureau of Industrial Resear the editor of the trade ma zine and the Secretary of t Wholesale Trade Division, t Directors' room, eight comm tee rooms, and the gene stenographers' office.

The Chamber derives revenue mainly from the me bership dues and the rent from the five lower floors the building, which are oc pied by the Boy Scouts, Red Cross, the Builders' change, the Continental tional Bank, the Travel Men's Insurance Company, Coöperative Grocers' Orga zation, and various pro sional and business men. T all pay for accommodations

Social and club facili are provided for in the libra the lounging-room and card room, which are on sixth floor, and the rest rant, which occupies the en eighth floor, where noon lun eon is served to the memb and their guests, and quently dinners and banqu Noon luncheon is also ser in the eight committee ro in connection with priv meetings.

The Chamber of Comme has outgrown its quarters it is hoped that building plans under discussion fore the war will shortly be revived.

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NASHVILLE, TENN.—The Commercial Club of Na ville occupies 81,000 square feet of space in the story building where it has its headquarters. ground floor is rented for store purposes, and second and third floors are rented to the Nashv Manufacturers' Association, an affiliated organiza of the Commercial Club which maintains a perma exhibit on those floors. On the fourth floor are offices of the subsidiary and other affiliated organ tions of the Club. The small asembly-room, wit seating capacity of 150, is on this floor, as are the billiard- and pool-rooms. On the fifth floor the lounging- and reading-rooms, several pri dining-rooms and the executive offices of the Com



THE INTERIOR OF THE CHAMBER ROOM IN THE ROCHESTE N. Y., CHAMBER OF COMMERCE BUILDING

cial Club. The Secretary has a separate office for his use. On this floor are also the ladies' private dining-room and reception room. On the sixth floor are the kitchen and main dining-room.

The social and club life of the members is very well provided for in this building, as the enumeration of its different rooms indicates. The building is used by practically every civic organization in Nashville for the holding of all kinds of assemblages, large and small. No charge is made for such use of the rooms. The social features of the Club's work are financed separately; no entertainment fund is maintained. When it is desired to accommodate large gatherings which cannot be held in the regular assembly-room, the main dining-room on the sixth floor, which will seat 750 people, is converted into an assembly-room.

The Commercial Club does not own the building, but holds a fifty-year lease on the property, which it has the privilege of purchasing at any time during the fifty years at a price agreed upon at the time the lease was entered into. The Commercial Club has spent about $88,000 for improvements on the property since it leased it, including $10,000 for furnishings.

The project was financed by the organization of a holding corporation and the issuance of sufficient stock to cover the expense. At the time the project was undertaken, each member of the Club was asked to subscribe to one share of common stock, the par value of which is $25, and as many shares of preferred stock, non-cumulative, as he felt able to take. The members were not obliged to subscribe to the stock, but practically 90 per cent of them did. A member coming into the Club now, however, is required to take one share of common stock in lieu of paying the initiation fee. He surrenders his equity in his common stock when he ceases to be a member, but he does not lose his rights in his preferred stock.

The Club derives its revenue from the membership dues and the rentals of space within the building. The three subsidiary organizations which are housed in the building do not pay for their space. A few of the affiliated organizations, however, namely the Printers' Club, the Men's Wear Association, the Credit Men's Association, the Engineering Association, the Grain Exchange, the Traffic Bureau and the Nashville Manufacturers' Association, pay a small monthly rental.



THE PONTIAC, MICH., BOARD OF COMMERCE BUILDING

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PONTIAC, MICH.—The space in the three-story-and-basement building occupied by the Pontiac Board of Commerce is divided into the following rooms: the Secretary's office, the Assistant Secretary's office, the President's room, the stenographers' office, a committee room, the dining-room and the auditorium. The Red Cross has its executive offices in the building, also the Oakland County Patriotic League and the Farmers' Bureau. They are not charged any rent for their accommodations. No social or club facilities are provided for the members other than those furnished by the restaurant, where from 80 to 150 persons are served every day.

The Board of Commerce building is essentially a community center. Four Liberty Loan campaigns and other patriotic drives were handled from it, and several banquets have been given there in honor of soldiers leaving the city for service. The rooms are also used by certain of the women's research societies and literary clubs and by the Retail Merchants' Bureau. Practically all the conventions that are held in the city, including the annual Chautauqua session, are operated from the Board of Commerce, and many civic functions of a business and social character are held in the building. The auditorium has a seating capacity of 250. The dining-room, which will accommodate 300, is also frequently used as an auditorium. A fund of from $500 to $800 is appropriated every year for entertainment purposes; this is very seldom completely used.

The Board of Commerce building and the land on which it stands cost the organization $30,000, and the furniture and equipment $6,000. The dining-room, which was established after the building had been acquired, represents an outlay of $10,000. The building was purchased from Dr. Galbraith, and a corporation was immediately formed under the name of the Galbraith Home Company. Stock was issued at $10 per share, to which the members of the Board of Commerce subscribed in allotments of from ten to twenty shares. The stock does not pay any dividends. The Chamber's principal source of revenue is the dues of the members. No portion of the building is rented.

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PORTLAND, ME.—The Portland Chamber of Commerce occupies approximately 3,600 square feet of space in a three-story building controlled by the Board of Trade Building Association. About 3,000 feet of this space is on the ground floor, where are the private offices of the Executive Secretary, the Traffic Manager, and the Secretary of the Publicity Bureau. Space was reserved for the telephone exchange and the information department; also for the desk of the Secretary of the Farm Bureau, which is quite a prominent department during certain months in the year.

The large room on the ground floor is used as an assembly-room and library, and the newspaper files are kept there. The room has seating accommodations for about 150 members. There is no regular auditorium.

Adjoining is an adequately equipped room for the stenographers, containing also the addressograph and mimeograph machines. On the second floor is a room containing about 450 square feet which is used as a Directors' room or for committee meetings.

No outside organizations are accommodated in the building. No special social or club facilities are provided for the members, and the Chamber does not operate a restaurant. The building is used a great deal by outside civic and commercial organizations for conferences of different kinds, and, to a certain extent, answers as a community center.

The old Board of Trade, which the present Chamber of Commerce succeeded, paid $25,000 for this building, which was formerly a bank building, and financed the project by issuing and selling 1,000 shares of stock having a par value of $25 each. The majority of the stock was taken by members of the Board. The members do not surrender their equity in the building as represented by their stock when they resign, but many of the members have voluntarily turned over their shares to the Chamber, which now has a controlling interest in the building.

The Chamber's chief sources of revenue are the dues of the members and the rentals from the space not occupied by the organization for its work.

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BUTLER, PA.—The Chamber of Commerce has its headquarters in the Community Building, formerly the Y. M. C. A. building, which the Chamber leased in 1917 for the purpose of providing a home under one roof for the several organizations that cover much the same field of work as that of the Chamber of Commerce. This was done in order to eliminate duplication of effort, and also to promote commercial activity by providing club facilities for the farmers who do their shopping in Butler.

The Chamber leased the building for five years, with the privilege of purchasing it at any time for $25,000. The initial steps toward ownership were taken shortly after the Chamber opened the building to the public, by issuing $30,000 worth of stock, or 600 shares, at par value of $50 each, which allowed $5,000 for lot improvements. An intensive campaign to dispose of the stock has not yet been undertaken, but the Chamber sold 200 shares as a result of a small campaign in 1917, and decided to postpone further efforts in that direction until after the war. The members hold 95 per cent of the stock already sold. No resignations of membership are accepted unless the member leaves the city, in which event he must dispose of his stock. The Chamber spent $2,500 for the furnishings and equipment of the Community Building.

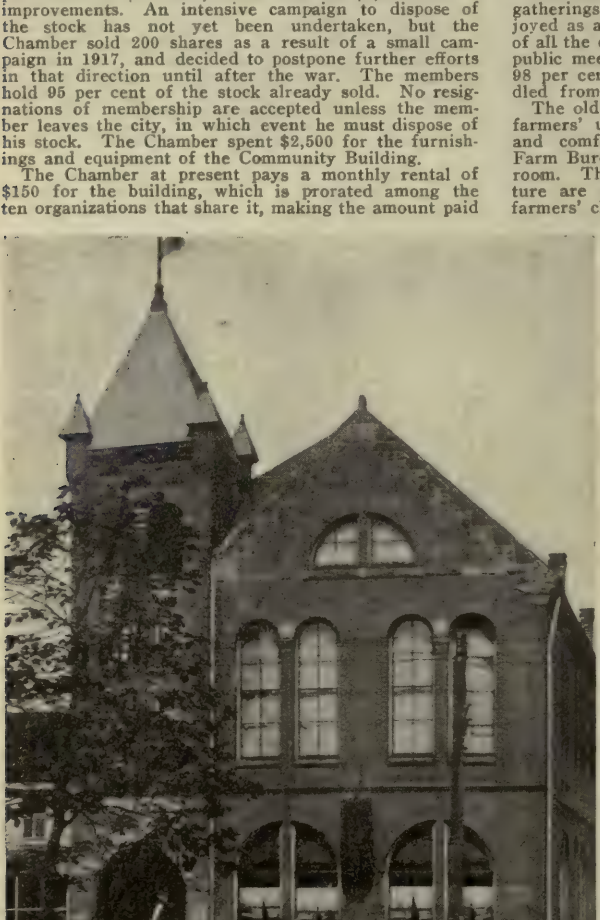
The Chamber at present pays a monthly rental of $150 for the building, which is prorated among the ten organizations that share it, making the amount paid by each organization, including the Chamber, the nominal sum of $15.

The building contains three stories and a basement which covers 10,000 square feet of space, divided as follows: In the basement are the women's rest room and the offices of the Justice of the Peace and of the Gospel Mission. On the first floor are the Secretary's office, a committee room, the office of the Farm Bureau, the farmers' room, which will accommodate 200 people, the offices of the Food Administrator, the Fuel Administrator, the Four-Minute speakers, the Red Cross, the Liberty Bond workers, the War Saving Stamp workers, the Business Men's Association, the Grocers' Association, the Musicians' Society, the Collector of Internal Revenue, the Auto Club, the Medical Association, and the Banks' Clearing-House. On the second floor are the auditorium, with a seating capacity of 300, the office of the Military Training Association, the supply room, and the janitor's rooms. The janitor and his wife live in the house and help in the serving of dinners and banquets.

The dining-rooms provide ample facilities for social gatherings and banquets. The building is much enjoyed as a community center; it is, in fact, the center of all the community's activities and campaigns. Many public meetings have been held in the auditorium, and 98 per cent of all the city's war work has been handled from the Community Building.

The old gymnasium was fitted up especially for the farmers' use. It is furnished with substantial tables and comfortable chairs and benches. The County Farm Bureau maintains an elaborate exhibition in this room. The latest farm papers and agricultural literature are scattered over the tables. Adjoining this farmers' club room is a check room where the farmers may check their bundles free of charge and have their purchases sent from the local stores. The farmer is given a duplicate check by the merchant who delivers his package to the Community Building.

The Chamber has so far maintained only one entertainment fund, that for drafted men. From this fund was defrayed the expense of the dinner and the warm "send-off" which were given to the men who left town to enter war service.



THE COMMUNITY BUILDING OCCUPIED BY THE CHAMBER OF COMMERCE AT BUTLER, PA.

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ALTOONA, PA.—The Commerce Building occupied by the Altoona Chamber of Commerce cost $150,000, including the lot. It is a three-story structure and was built by the Commerce Improvement Association, a private corporation organized by members of the Chamber of Commerce. The building is 64 feet wide by 120 feet deep. The Chamber occupies four rooms on the third floor covering 902½ square feet, divided into a reception room and the stenographers' quarters, covering 181½ square feet; the room occupied by the Farm Bureau covering 175 square feet; the manager's office, covering 200 square feet, and the Directors' room, covering 346 square feet.

The building is maintained by the rentals from five stores and twenty-eight offices, including the Chamber's offices. The Chamber rents its space from the corporation on the same basis as the other tenants, paying $95 per month. There is a barber shop in the basement, and there are state and national employment offices, real estate and insurance offices and offices of professional men elsewhere in the building.

The assembly-room on the second floor, including the balcony (40 x 65 feet), is capable of seating 600 people, and all users, including the Chamber of Commerce, pay a uniform rental of $12.50 for each occasion.

The Chamber does not provide any club facilities or operate a restaurant, nor does it provide an entertainment fund, but the building is used very extensively as a community center; it is, in fact, the headquarters for the civic life of Altoona.

News and Ideas for Commercial and Civic Organizations

Curbing the Profiteers

FLINT, MICH.—Early this fall the Flint Board of Commerce instituted a plan for reducing the high cost of living which is proving an unqualified success. Disturbing rumors had reached the leaders of the Board of Commerce that thousands of automobile workers were to be laid off for a period of several months during the reconstruction period and that wages were to be greatly reduced. A committee of the Board of Commerce visited several of these manufacturers to learn the facts, and while some of them declared it to be their intention to retain all their employes at the same wages they had been receiving, the committee gathered sufficient information concerning the living conditions of the workers to convince them that the rapid advancement in prices for the necessaries of life had placed many hardships upon the workingmen and that there must be a checking of the upward trend of prices or a business catastrophe would result. The Board of Commerce determined to take immediate radical action. A meeting of the retail merchants in the city was called, at which the Board presented its plan. This was for the retailers to take a stand independent of the wholesalers, jobbers and manufacturers and arbitrarily cut prices to the consumers on practically everything that comes within the scope of living necessities.

The meeting was attended by 550 representatives of the retail business establishments in Flint, including stationery, produce, both wholesale and retail, meat, clothing, electric supplies, shoes, drygoods and notions, drugs, baked goods, printing, groceries, furniture, jewelry and hardware. The coöperation of these men was obtained at once, and reductions in the prices of the living necessities were made forthwith, regardless of those fixed by the wholesalers, jobbers and manufacturers, altho many of the city's industrial leaders fell in with the plan.

In the meantime, however, the coal dealers had gotten together and announced a reduction in the price of coal which would bring it considerably below the prices fixed by the Government; and a creamery establishment supplying 80 per cent of the milk sold in the city announced a reduction of one cent a quart, bringing the price to 13 cents, which is from two to three cents below the prices charged in other Michigan cities. On the recommendation of the Board of Commerce committee, the landlords of Flint voted a reduction of 15 per cent in rentals for single dwellings and apartments, effective at once and to continue for a period of ninety days. The motion picture houses agreed to coöperate in the movement, and the restaurants promised lower prices because of the anticipated cuts in the cost of their supplies.

The retailers have undertaken to break the upward trend of prices, whatever the cost may be to them. While it may mean the operation of their establishments at a loss for a short period, they feel that their stand in championing the interests of the general public will bring them an increased volume of business that will remain with them after prices return to normal and that they will reap benefits which will more than offset the temporary loss, however large that may be. Aside from the financial benefits, the effect on the morale of the community, particularly of the workers, has been so satisfactory that the action has been more than justified from every point of view. The increased volume of business anticipated by the merchants at the outset made itself apparent during the first weeks of the movement, with the result that the holiday trade in Flint smashed all previous records.

DANIEL A. REED,
Managing Director, Flint Board of Commerce.

News-Stand Privileges for Physically Handicapped Soldiers

New York, N. Y.—The City Club of New York recently took up with the Board of Estimate and Apportionment the importance of its granting licenses for news-stands at the entrances of the new subways to soldiers who have returned to the city so handicapped that they are in danger of becoming public charges. A resolution adopted by the Board of Estimate in July, 1912, withheld such privileges, not only during the period of the construction of the new subway systems but after their completion. That resolution has now been modified, and the licensing of news-stands was permitted after December 27, 1918. Preference is to be given to the blind, the lame and others physically handicapped.

The letter of the City Club calling the matter to the city's attention was addressed to Mayor Hylan, who is the Chairman of the Board of Estimate and Apportionment, and reads as follows:

December 18, 1918.

Honorable John F. Hylan, Chairman, Board of Estimate and Apportionment, City Hall, Manhattan.

Sir:

There has been for many years a growing and excellent tendency to give preference in the granting of city licenses for the vending of newspapers from stands to the physically handicapped. The City Club has been studying with care the possibilities open to the blind and the lame, with particular reference to the situation which will confront us with the return of a large number of seriously wounded soldiers. In connection with this investigation it has been brought to our attention that the Commissioner of Licenses has ruled that he is without power even with the approval of the Boro Presidents to grant licenses for news-stands near the entrances to stations on the dual subway system. We are advised that he holds that two resolutions adopted by the Board of Estimate and Apportionment on July 11, 1912, and March 5, 1915, altho apparently intended to cover simply the period during which the subways were in construction, are broad enough to prevent the granting of news-stand privileges even after the subway has been finished.

We recognize fully the possible abuse of permitting the obstruction of news-stands at congested traffic points. It is undoubtedly true, however, that news-stands at subway entrances are of great public convenience, and if properly located under the supervision of the Boro Presidents can be made in most cases unobjectionable. It is also a fact that at present the obstruction caused by unlicensed newsdealers nominally selling papers from under the arm, but actually using considerable sidewalk space for the storage of their supplies, i often a greater obstruction than a properl located stand would be.

We respectfully urge the Board of Estimat and Apportionment, therefore, to so modif the resolutions of July 11, 1912, and March 5 1915, as to permit the granting of news-stan licenses under proper restrictions. We als strongly urge that preference be given in th granting of these licenses to the blind, th lame and those so physically handicapped tha they are in danger of becoming public charges

Respectfully,

THE CITY CLUB OF NEW YORK.

Why Not Get the Habit of Appreciation?

Chehalis, Wash.—Chehalis believes i showing its appreciation of its citizens be fore they have passed on, as the occasio here related indicates. At a patriotic ban quet held in the St. Helen's hotel early i January, when the State Chairman of th Liberty Loan Campaigns presented to Lewi County its honor flag, another interestin presentation also took place. The beautifu silk flag shown in the accompanying illus tration was given by the Citizens' Club t



THE FLAG PRESENTED TO A PROMINENT CITIZEN OF CHEHALIS, WASH., IN APPRECIATION OF HIS ENERGETIC WAR WORK

N. B. Coffman, the man who was responsible for the fine showing made by Lewis County in the Liberty Loan and other war work drives. Mr. Coffman was at the head of nearly all the war work carried on in the county, which was most effectually organized under his leadership. The county exceeded its allotments in each one of its money-raising campaigns during the war.

The cases where unselfish service is openly appreciated and rewarded should not be isolated, yet few of them come to one's notice. The encouragement to even greater efforts on the part of the one honored and the fine spirit of good fellowship and good will which prevail are among the fruits of such occasions when real appreciation of personal worth is shown.

A. F. MARSH,
Managing Secretary, Citizens' Club of Chehalis.

New Bulletins

ATTLEBORO, MASS.—*The Attleboro Optimist*, the official monthly publication of the Attleboro Chamber of Commerce.

BRUNSWICK, GA.—*Greater Brunswick*, the official monthly bulletin of the Brunswick Board of Trade.

CONCORDIA, KANS.—*Chamber of Commerce News*, the monthly house organ of the Concordia Chamber of Commerce.

FORT WAYNE, IND.—*Fort Wayne Life*, the official monthly bulletin of the Chamber of Commerce of Fort Wayne.

JOPLIN, MO.—*Community Work of Joplin, Missouri*, published monthly by the Joplin Chamber of Commerce.

LONDON, ONT., CANADA.—*Chamber of Commerce Bulletin*, published weekly by the London Chamber of Commerce.

MCKEESPORT, PA.—*The Chamber of Commerce Record*, published monthly by the McKeesport Chamber of Commerce.

POTTSVILLE, PA.—*Pottsville Progress*, the official monthly publication of the Pottsville Chamber of Commerce.

SARNIA, ONT., CANADA.—*The Sarnian*, the official publication of the Sarnia Chamber of Commerce.

WATERBURY, CONN.—*For Waterbury*, the official monthly bulletin of the Waterbury Chamber of Commerce.

Recently Issued Printed Matter

ASTORIA, ORE.—The annual report of the Astoria Chamber of Commerce.

CLEVELAND, OHIO.—"The Union Station—On the Lake Front? or On the Public Square?"—is the subject of a report of the Special Committee on Freight and Passenger Terminal of the Cleveland Chamber of Commerce, issued in December.

EAU CLAIRE, WIS.—The Civic and Commerce Association has issued an illustrated booklet containing interesting information about Eau Claire's progress during recent years.

FLINT, MICH.—A booklet outlining the plan of the Flint Board of Commerce to reduce the high cost of living has been published by that organization.

JERSEY CITY, N. J.—A Buyers' Guide and Industrial Directory of Jersey City, N. J., "containing a general alphabetical list of all of Jersey City's industrial concerns, an alphabetically arranged list of all the products manufactured in the city, a classified business directory, and descriptive material relative to the city government, tax rate, rail and water facilities, police and fire protection, etc.," has been issued by the Jersey City Chamber of Commerce. Copies may be obtained from F. Van Z. Lane, the Manager. A small price is charged.

LOCUST VALLEY, L. I., N. Y.—The year book of the Matinecock Neighborhood Association.

LOUISVILLE, KY.—The annual report of the Secretary of the Louisville Board of Trade is contained in the January issue of the Louisville *Board of Trade Journal*.

NEWBURGH, N. Y.—The annual report of the Newburgh Chamber of Commerce contains the reports of the various bureaus of the organization and the financial statement for 1918.

NEW YORK, N. Y.—The year book of the Citizens Union for 1918, entitled "A Record and a Prospect."

NIAGARA FALLS, N. Y.—"What is City Planning?" is the title of a booklet issued by the Niagara Falls Chamber of Commerce describing its city planning exhibition.

OMAHA, NEBR.—A map of Omaha and its natural retail trading territory has been published by the Omaha Chamber of Commerce. On the back of the map are listed the cities and towns in that territory, with the population of each town and the number of garages, drug stores, grocery stores, hardware dealers, jewelry and shoe dealers located in each.

PORTLAND, ORE.—The annual report of President Corbett of the Portland Chamber of Commerce is published in the Chamber's weekly bulletin, *Portland Commerce*, of January 4, 1919.

SHARON, PA.—"A Short Cut from Producer to Customer" is the title of a leaflet published by the Sharon Chamber of Commerce telling about Sharon's curb produce market which is being promoted by the Sharon Chamber.

TAMPA, FLA.—A resumé of the accomplishments of the Tampa Board of Trade for the year ending December 31, 1918, is published in the monthly bulletin of the Board of Trade, *Tampa Truisms*, of January 10, 1919.

NATIONAL ASSOCIATION OF COMMERCIAL ORGANIZATION SECRETARIES.—The proceedings of the thirteenth annual meeting of the association, held at Rochester, N. Y., November 18-20, 1918, has been published.

Changes Among The Secretaries

A list of the recent changes and new appointments occurring among the secretaries of commercial and civic organizations thruout the United States.

Readers are asked to notify the Editors of such changes as soon as they occur, in order that the list may be made as complete as possible each month.

G. L. Baker has resigned the secretaryship of the Manhattan, Kans., Chamber of Commerce. He is succeeded by F. W. Jensen, formerly secretary of the Business Men's Association of Edgerton, Wis.

Herbert Bayliss, formerly secretary of the Lake Charles, La., Chamber of Commerce and recently employed with the Union Sulphur Company, has resigned his position with that company to resume the secretaryship of the Lake Charles Chamber of Commerce.

Benjamin J. Brown has resigned the secretaryship of the Lake County Chamber of Commerce at Painesville, Ohio.

J. F. Bryan has resigned the secretaryship of the Creston, Ia., Commercial Club, to accept the secretaryship of the LaSalle, Ill., Association of Commerce.

Walter G. Cooper has resigned the secretaryship of the Atlanta, Ga., Chamber of Commerce. He is succeeded by Charles E. Robertson.

Hugh G. Corbett has been elected managing secretary of the Chamber of Commerce of Champaign, Ill., succeeding C. W. Murphy.

Fordyce W. Cowing, formerly assistant secretary of the Jamestown, N. Y., Board of Commerce and late of the U. S. Army, has been elected secretary of the Elk County, Pa., Manufacturers' Association, with headquarters at Ridgway, Pa.

W. D. Fisher, secretary of the Alliance, Nebr., Community Club, has tendered his resignation, to take effect March 1. Mr. Fisher has accepted the secretaryship of the Sheridan, Wyo., Commercial Club.

J. C. Forester, formerly secretary of the Greensboro, N. C., Chamber of Commerce, is the new secretary of the Franklin, Pa., Board of Trade.

H. M. Gardner, second vice-president of the Minneapolis Civic and Commerce Association, has been appointed manager of that organization, succeeding Howard Strong. J. S. Cady has been appointed secretary.

F. H. Hood has resigned the secretaryship of the Terrell, Tex., Chamber of Commerce.

Simms Jamieson, formerly secretary of the Salina, Kans., Chamber of Commerce and late of the U. S. Naval Reserve, has accepted the secretaryship of the Hagerstown, Md., Chamber of Commerce.

W. W. Hite is the new secretary of the Colorado Springs, Colo., Chamber of Commerce, succeeding the late Alva W. Henderson.

F. A. Lallier has resigned the positions of secretary and traffic manager of the Galveston, Tex., Commercial Association, to engage in private business.

W. A. McElroy has resigned the secretaryship of the Bartlesville, Okla., Chamber of Commerce, to accept the secretaryship of the Young Men's Business League at Houston, Tex., succeeding I. C. Timmins.

Lester Milligan has been elected secretary-treasurer of the Greater Clarinda Club of Clarinda, Iowa, succeeding Ray W. Robie.

George H. Mosser has resigned as manager of the Trenton, N. J., Chamber of Commerce, to accept a call from the government officials of the Second Federal Reserve District in the establishment of Government Savings Societies.

Henry W. Raymond is the new secretary of the Iowa City, Ia., Commercial Club, succeeding C. F. Huebner, lately resigned.

Ray W. Robie has resigned the secretaryship of the Greater Chariton Club, Chariton, Ia., to accept the secretaryship of the Newton, Ia., Commercial Association.

R. Stuart Royer has been elected business manager of the Alexandria, Va., Chamber of Commerce. Mr. Royer was formerly City Manager at Fredericksburg, Va., resigning to enter the Engineering Corps of the U. S. Army.

Mandel Sener has resigned the secretaryship of the Chamber of Commerce at New Bern, N. C.

Lieut. G. Howard Smith, who resigned the secretaryship of the Commercial Club and of the Merchants' Association of Thief River Falls, Minn., to enter the officers' training school at Camp Pike, Ark., has resumed his duties in connection with the secretaryship of the above organizations.

Edward A. Stanford is the new secretary of the Cooperstown, N. Y., Chamber of Commerce.

Lieut. Walter K. Sumner, formerly secretary of the Butler, Pa., Chamber of Commerce and late with the U. S. Army in France, has been elected secretary of the Chamber of Commerce at Auburn, N. Y.

E. C. Taylor has been appointed secretary of the Chamber of Commerce at South River, N. J.

FORWARD STEPS
REPORTED TO THE AMERICAN CITY
BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

MAYORS

Making Americanization Easier

HARTFORD, CONN.—In the early summer the Mayor's Americanization Committee of Hartford erected a small building on the edge of the parkway in the middle of the factory section. It was open from 12 to 1 every day and became known as the "Noon Office." Announcement was made on the bulletins in the factories, as well as upon the walls of the cottage, that assistance would be given there to those who wished to become citizens, with information on questions relating to English classes, war activities and citizenship.

It was not the intent to bring pressure upon anyone to become a citizen. It is not so much pressure as opportunity that the men need. The hours of the Clerk of the Court are from 9 to 5, and consequently to go after papers means a break in the routine, while the better the workman is, the less he will welcome interruption to his work. If he happens to know but little English, there is additional reluctance, with the result that in many cases the papers are not secured.

The men came to the Noon Office with a rush. Two clerks were necessary to take care of them. Papers were filed and appointments made to go to the office of the Clerk of the Court at the noon hour, many times in company with the representative of the committee, and the courtesy of the Clerk made it possible to receive men after hours in some cases. All of this meant a saving of time, which was appreciated by everyone involved.

The law places a limit of seven years on the first papers, and it was surprising to see the number of papers which had nearly lapsed. In every such case it was stated, "It wasn't because I didn't want to get them,—it's hard to break away from work, and I kept putting it off." A frequent remark also was, "My wife's been after me for a long time to get my papers, and I'm glad to have an easy chance to do it."

When the Fourth Liberty Loan was opened, the Noon Office was turned over to that Committee for its use, and the sum of $80,000 was subscribed in addition to the much larger amounts handled in the adjacent factories.

RICHARD J. KINSELLA,
Mayor.



NOON OFFICE OF THE MAYOR'S AMERICANIZATION COMMITTEE, HARTFORD, CONN.



CIVIC CENTER, CHEHALIS, WASH., PLANNED AND LAID OUT IN ADVANCE OF ACTUAL NEEDS

Plan a Civic Center in Advance of the Town

Chehalis, Wash.—The little city of Chehalis has for some time been known as the home of a progressive body of citizens, whose services thru their Citizens Club have demonstrated the need of a civic center worthy of the community that Chehalis seems destined to be. Accordingly, the city has set aside as a civic center the plot shown in the accompanying photograph, and has acquired adjacent sites for future municipal buildings. Many communities find that with their growth they have cut themselves off from the opportunity of constructing a civic center except at great cost. We in Chehalis have our center laid out, and our efforts will be directed toward growing up to it.

W. A. WESTOVER,
Mayor.

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Vancouver's Successful Fish Market

Vancouver, B. C.—The new municipal fish market is not, strictly speaking, a city enterprise, except in so far as the City Council exercises control over the prices at which stated varieties are sold to the public. The quality of the product is at all times under the inspection and supervision of the city health authorities. The lessee of the city market is the Defiance Packing Company, which has certain fishing rights on the coast. If additional areas are granted to them for the catching of fish, it is their intention to establish in other cities of Western Canada markets similar to those now in operation under their jurisdiction in the cities of Vancouver, North Vancouver and New Westminster.

During the first three months, the market at Vancouver occupied a small building at the foot of Gore Avenue on city property. Altho inadequate to handle the volume of business that developed immediately after the market was opened, it proved a success, an average of one thousand customers a day being served from the start, with approximately four thousand pounds of fish of various kinds.

Recently the city market on Main Street near the Union Station was rented to the Defiance Packing Company, adding considerable revenue to the city. The new market was opened Saturday, August 19, and the part devoted to the sale of fish forms a market that is really worthy of a city much larger than our own. More than two thousand people were served on the opening day with sixteen thousand pounds of fish, one-third of which was salmon. The daily average sale of fish at the market is now nearly four tons, so that it is easy to calculate the saving effected on meat and bacon by means of this one institution. The fish to be sold at stated prices are retailed to the public as follows:

Codfish	5	cents per lb.
Soles	5	" " "
Herring	2	" " "
Rock cod	5	" " "
Salmon, frozen	5	" " "
Flounders	5	" " "
Skate	5	" " "
Crabs	10	" each, large
Chum salmon	5	" at all seasons per lb.
Black cod	7	" per lb.
Spring salmon	8	" " "

These prices are f.o.b. the market, altho the company is allowed an additional charge of 2 cents per pound for delivery to all points within the city limits. Many varieties of smoked and cured fish are also for sale at correspondingly reduced prices, and already at other markets in the city there has been a fall in the price of fish and meat products to meet the competition of the city market. A portion of the city leased by the Defiance Packing Company has been sublet by them as a meat market, "grocerteria" and fresh fruit and vegetable market.

We are entirely satisfied that this market under municipal control is serving the public with good food at fair prices and is popularizing substitutes for meat, an important conservation service in itself.

R. H. GALE,
Mayor.

Hawarden's New Municipal Building

HAWARDEN, IOWA.—On November 1, Hawarden officials moved into their new offices in the new municipal building shown in the accompanying photograph. We had expected to move in by September 1, but the work was delayed because of the many employes who have been called to the colors, and the difficulty the contractors have met in replacing them.

Features of the Building

The building is 50 by 90 feet, with a vestibule 8 feet wide and 24 feet long. On the first floor are the City Clerk's office, the Council Chamber, the ladies' rest room and wash room, the men's wash room, the furnace rooms, the jail, the firemen's shower bath and bedrooms, and two large rooms for fire equipment. The second floor is devoted to an auditorium for general community purposes, with a stage at the rear and two commodius dressing-rooms. The auditorium is also equipped with a booth over the entry for motion-picture apparatus. We expect to use the auditorium for entertainments, dances, church suppers, and such other public meetings as may be held from time to time.

The opera house and the skating rink in which such meetings formerly took place have been converted, the former into offices and the latter to the uses of an implement business, thus leaving no other auditorium than the churches. At the last session the State Legislature made it possible for small municipalities to levy a tax and construct such buildings; and as this city was the prime mover in securing the enactment of the law, we made use of it as soon as possible after it went into effect. The building cost, completed and furnished, about $25,000.

WALTER SCOTT,
Mayor.



THE MUNICIPAL BUILDING, HAWARDEN, IOWA

CITY MANAGERS

Workhouse Built by Prison Labor on Municipal Farm

WICHITA, KANS.—Until the present commission-manager administration came in, all prisoners in Wichita, both men and women, were housed in a miserable jail in the City Building. The jail was entirely too small, and conditions were unsanitary in the extreme. A temporary wooden structure was put up on Elba Island to house the prisoners while constructing the workhouse there. The workhouse is built of cement blocks that were made by prison labor, and of reinforced concrete which was mixed and poured by the prisoners. It was found necessary to get a small amount of skilled labor for the carpenter work and some of the plastering, but with these exceptions the building was put up by the prisoners. This building provides ample jail space, well lighted and ventilated. A kitchen, dining-room, office, bathrooms and dormitory are provided, so that the men can live in a healthy and cleanly manner.

This building is the first of a group which it is expected will be erected on the Municipal Farm. Work is already well under way on a detention hospital, which is located some two hundred yards from the workhouse building and is also being built very largely by prison labor.

The Farm comprises about twenty-eight acres, and during the last year it produced a very considerable proportion of the potatoes, beans, onions and other vegetables used there. A surplus of these would have been raised had it not been for the severe drought.

The temporary wooden building which was first put up has been used for women prisoners. By giving them proper quarters in which to live, we have been able to cure a number of them of the "dope" habit. While in prison, they have done the laundry work and made a number of prison garments for both the men and women, besides doing some Red Cross work, such as making gun-wipers.

This is a mere outline of the beginning of what is planned to be an extensive equipment for the proper care of the prisoners of Wichita.

L. R. ASH,
City Manager.

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Boulder Insists on New Water Rates to Meet Rising Costs

BOULDER, COLO.—During the last year, or at least since the beginning of the upward trend of prices and materials, public service corporations in general have besieged public utility commissions for rate increases. Municipalities have been extraordinarily slow in adjusting rates to prevailing conditions. Boulder is perhaps unique in this respect. A rate increase of 25 per cent was put into effect on October 1, with provision for meter service.

Boulder's million-dollar water-supply system is on a firm financial basis for the first time since it was constructed.

We succeeded during 1918, without the benefit of the raise in rates, in putting into the sinking fund toward the paying off of the $65,000 bond issue due April 1, 1919, the sum of $10,149.99. As a result of the raise in rates between October 1 and December 31, the Manager will further pay into the sinking fund $2,850.01, making a total of $13,000 that previous administrations have tried to put away annually. In addition to this, we will repay into the sinking fund $7,160, borrowed by previous administrations from the sinking fund and never repaid. Out of operations in 1919, after providing for all maintenance and ordinary extensions as in 1918, the new rates will enable the administration without the necessity of a special levy, which was heretofore considered probable, to pay $26,437.50 interest on outstanding water bonds and make up a deficit of $24,040 in the sinking fund; this, with additional interest which will come in on the $20,000 worth of Liberty Bonds now in the sinking fund, will make up $65,000 and enable the city to take up the first bond issue coming due in the water department on April 1, 1919.

In short, this means that we have succeeded in determining the true cost of running our municipal water-supply. Upon recommendation to our City Council, we secured the 25 per cent increase in rates without a revolution by the people, established metering as a regular departmental policy and converted the department from

an annual deficit-producer in the $23,000 class to a going concern with a life-sized surplus. Boulder had been selling water at an average rate of $48 per million gallons, which it cost the water department $65 per million gallons to deliver.

At first the feeling in Boulder was one of resentment that anything should be added to the ordinary cost of living by the municipality. Upon the positive showing that a going condition has many valuable advantages, the feeling is rapidly becoming one of appreciation of the courage of the city officials in proposing and urging such substantial changes in policy.

E. O. HEINRICH,
City Manager.

Municipal Progress in Birmingham, Mich.

BIRMINGHAM, MICH.—During May and June, 1918, four new wells were added to the municipal water system of Birmingham. These wells are on the same vein as the old ones and possess an average depth of 70 feet. The water shows a high test, and the bacteriologist at Lansing reports water from only one other municipal source in the state with an equal analysis as to purity.

A new set of street signs have been installed; 4 by 4 posts, painted green 4 feet above the ground, are provided with cross pieces which are attached at right angles to the upright posts. The two cross pieces are set at an angle of 135 degrees, which makes it possible for pedestrians to read either sign without completely crossing the street in either direction. The background on each cross piece is green to match the lower 4 feet of the upright post. The lettering is done in white, and the posts are painted white from the top to within 4 feet of the ground. The cross pieces are rounded off so that they possess no sharp corners or edges, consequently a blow, instead of cracking or splitting a portion of the sign, glances off the board. These signs are distinguishable at a long distance and are commented upon very favorably by outsiders.



ONE OF BIRMINGHAM'S STREETS, IMPASSABLE LAST SPRING, RECENTLY RESURFACED AND GRAVELLED

All the fire hydrants have been painted a bright orange. A demonstration convinced us that this shade could be distinguished in the dark at a greater distance than the red so commonly used.

Thru a mutual agreement with some of the hog-raisers and the village residents, garbage is collected semi-weekly without any expense to the villagers. Ashes, rubbish and leaves are hauled away by the village teams at a minimum cost to the residents.

Owing to the inconvenience and discomfort experienced by the residents last fall because of fuel shortage, the manager entered into negotiations direct with the mines and purchased thirty-five cars of coal. This represents not only enough for the municipal water plant, but has already been the means of providing warmth for a hundred different families. The fuel is distributed by the village to householders at exactly the cost, thereby saving the customers from one to two dollars a load, besides giving them, in most cases, a much better quality of bituminous coal.



IMHOFF TANK RECENTY PUT IN OPERATION, BIRMINGHAM, MICH.



$400,000 MUNICIPAL FISH HARBOR, SHOWING CANNERIES, LOS ANGELES, CAL.

Both the village and the township, one of the wealthiest in the entire state, are sorely in need of a modern building for administrative purposes and for public meetings. It is hoped to awaken sufficient interest so that by popular subscription a patriotic fund may be raised for the purpose of erecting a modern structure to be used jointly for legislative, social, and recreation purposes.

GERARD ALAN ABBOTT,
Village Manager.

HARBOR DEPARTMENTS

Fish Harbor Proves Profitable

Los Angeles, Cal.—The Fish Harbor in Los Angeles is now paying approximately 10 per cent on the investment. Under plans prepared by the Harbor Department, the city, at an investment of about $400,000, has provided one of the most modern and complete fish harbors in the world, which promises to be one of the most profitable of all the many municipal projects.

The income on the investment consists of rent from the fish canneries and allied industries. These occupy space in the 65 acres reclaimed with silt and sand dredged from the various basins and channels of the harbor. Some of this sand passed thru a pipe line 7,000 feet in length. Running the length of this plot of reclaimed ground is a wharf over 1,600 feet in length, built on piling and reserved for the exclusive use of the fishing boats. A harbor of 40 acres for the exclusive use of the fishing boats has also been dredged to a depth of 13 feet at low tide and is protected by a jetty 2,400 feet in length. Approximately 100,000 tons of rock have been used in the construction of this jetty.

The canneries are built facing the wharf, and railroad connections are provided in the rear. There has been such a great demand for cannery sites at the Fish Harbor, due to the increased demand for canned fish, that the city is now building a second wharf about 1,200 feet long extending at right angles to the first wharf. This will be filled in, and additional sites will be provided for canneries.

The United States Fish Commission and the State Conservation Commission are both said to be making careful investigations into the habits of the fish for the guidance of the fishermen, so that the canneries may be steadily supplied. The entire industry is, of course, under the control of the United States Food Administration.

The fish canned here include tuna, albacore, yellow tail and sardines, and these are well adapted for use in military and naval service. The canneries are operated under the supervision of an expert from the United States Bureau of Chemistry as to their processes and product.

C. M. GORDON,
President, Board of Harbor Commissioners.



FISHING FLEET AT THE MUNICIPAL FISH PIER, LOS ANGELES

HIGHWAY DEPARTMENTS

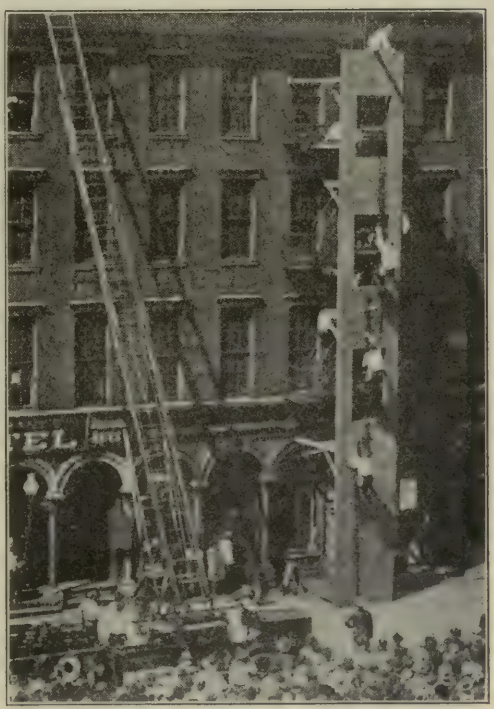
St. Louis Public Safety Week

ST. LOUIS, MO.—During the week of September 16, St. Louis entertained the Seventh Annual Congress of the National Safety Council and at the same time conducted a Public Safety Week, in accordance with a proclamation by Mayor Kiel of St. Louis. At a mass meeting in the Coliseum, 1,600 police with their Chief, the Board of Police Commissioners, the Director of Streets and Sewers, the chairman of the Public Safety Committee, and others discussed the situation. Representatives of the other city departments and the schools, of the Boy Scouts and of industries, also participated in preliminary conferences.

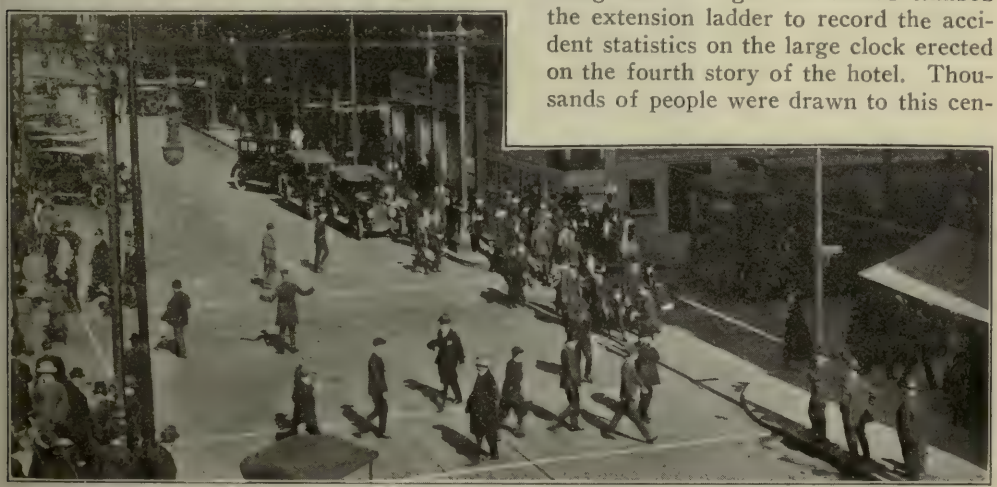
The police were instructed to enforce all traffic laws, with special emphasis upon their safety features. The police wore buttons reading, "We are helping to make St. Louis safe from accident." They gave talks in the parochial and public schools and assisted in distributing the literature in the campaign.

The Department of Streets and Sewers saw that all markers, fire plugs and street crossing white lines were put in first-class condition.

The Fire Department exploded high-power aerial salutes from each of the Fire Department buildings at ten o'clock on the morning of the first day, announcing the opening of Safety Week. Subsequently, thousands of persons witnessed the demonstrations held in the principal parts of the city, showing rescue and pompier work. Every day some of the fire apparatus made a run to the hotel where the convention was being held. A girl in overalls climbed the extension ladder to record the accident statistics on the large clock erected on the fourth story of the hotel. Thousands of people were drawn to this cen-



FIRE DEPARTMENT DEMONSTRATIONS, ST. LOUIS' PUBLIC SAFETY WEEK



SAFETY LINES AT STREET CROSSING, ST. LOUIS' PUBLIC SAFETY WEEK

ter to see the exhibition and watch the recording of the facts on the clock.

Under the Department of Parks and Playgrounds twelve motion picture shows were given in the different playgrounds during the week. These were viewed by 100,000 workmen and their families.

The Coroner's office assisted in many ways, starting the campaign by announcing a crusade on accidents thru the papers, furnishing statistics to all the newspapers, providing special articles and taking charge of the statistical clock.

The public and parochial schools turned over their entire organization for the week, and the Boy Scouts and the industries cooperated in distributing 700,000 pieces of printed matter.

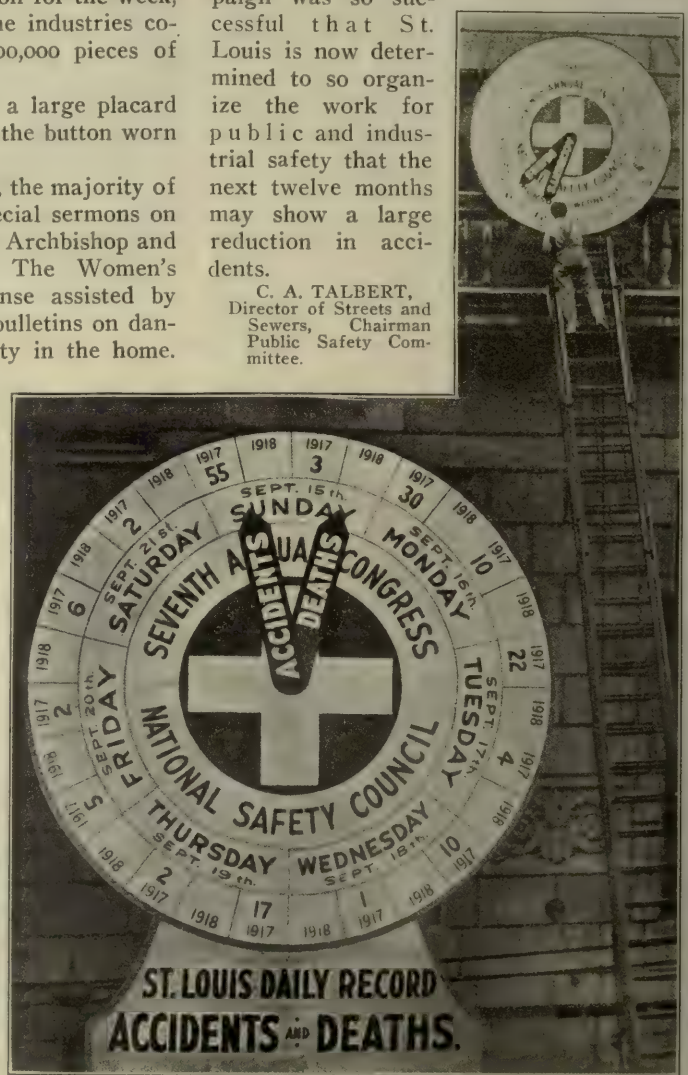
Every street car carried a large placard with the same legend as on the button worn by the police.

On Sunday, December 15, the majority of the clergymen preached special sermons on safety at the request of the Archbishop and the Church Federation. The Women's Council of National Defense assisted by distributing 40,000 special bulletins on danger in the streets and safety in the home. All of the newspapers gave splendid coöperation. The retail merchants and the large department stores assisted by placing safety placards in their windows. Every motion-picture house ran two films thruout the week: "We Are Helping to Make St. Louis Safe from Accidents" and "How You Can Help to Make St. Louis Safe from Accidents." In the latter were shown the fundamental things that every citizen should do. Every large club in the city gave a special meeting, at which a nationally known speaker outlined what the safety problem was. In this way ten thousand business men were reached. Talks were given by the members of the executive committee and by other safety experts in every one of the high schools.

Automobile owners coöperated by displaying 20,000 stickers on their windshields and by distributing 50,000 letters from the President of the Chamber of Commerce.

During the entire week, according to the record of the Coroner's office, there was only one death from accident. During the corresponding week of the preceding year, there were twenty-four deaths from accident, and in the week just prior to the campaign, there were ten deaths. The campaign was so successful that St. Louis is now determined to so organize the work for public and industrial safety that the next twelve months may show a large reduction in accidents.

C. A. TALBERT,
Director of Streets and Sewers, Chairman Public Safety Committee.



SAFETY CLOCK, AND GIRL ON EXTENSION LADDER RECORDING FACTS, IN ST. LOUIS' PUBLIC SAFETY WEEK

A Non-Skid Asphalt Pavement

SAN FRANCISCO, CAL. An excellent non-skid pavement can be made by scattering No. 3 crushed rock on an asphalt surface immediately after it has been spread and raked. Send a 5- or 8-ton steam roller (preferably the latter) immediately over the surface, using no hand roller. The roller presses the crushed rock into the hot asphaltic mixture, making the surface as uniform as an ordinary asphaltic pavement. The resulting surface is perfectly smooth, but, being studded with the crushed rock, provides better traction for all kinds of vehicular traffic. The tendency for automobile skidding is reduced by fully 75 per cent. The rock used must be of the very best quality and reasonably uniform. It should be perfectly clean and dry. The best results were obtained with an asphalt wearing surface over a binder.

PRESTON W. KING,
Construction Engineer, Department of Public Works.



LAYING ASPHALT WITH THE AID OF A LUTZ HEATER, PREPARATORY TO ROLLING IN CRUSHED STONE FOR NON-SKID PAVEMENT, SAN FRANCISCO, CAL.



NON-SKID PAVEMENT; ROLLING THE CRUSHED STONE INTO THE ASPHALT WITH A BUFFALO-SPRINGFIELD ROLLER

- WATER - DEPARTMENTS

El Paso Proves Economy of Electrically Driven Wells

EL PASO, TEX.—The forty-four wells heretofore used to supply water for the residents of El Paso, Tex., are all operated by air pressure, generated thru oil engines; but the increased and still increasing price of fuel oil, not to speak of its growing scarcity, has caused the city to have its new wells operated by pumps driven by electric motors. The first of the new wells to be operated in this way has just been brought in on one of the mesas (high table-lands) to the east of the city.

The new well, drilled by Layne & Bowler, cost about $75,000, but the experiment has already proved that the expenditure was profitable. The well is probably the largest in the Southwest, and its daily flow approximates 2,000,000 gallons. The electric equipment now consists of two temporary motors, but the permanent equipment will be a 250-horse-power motor and a special Layne & Bowler type pump, to be installed as soon as conditions enable factories to make deliveries.

Preliminary estimates show that the cost of placing water in the mains under the electric plan will be less than 4½ cents a

thousand gallons, as against 9 cents under the oil-and-air system. Again, the new system can be operated with a minimum working force, one man being sufficient to care for several wells, while the oil-and-air plan requires a considerable number of helpers, Carefully compiled estimates on the experience of other cities show that the efficiency of oil and air is less than 20 per cent, while it approaches 60 per cent in the case of electricity. This being the case, it is more than probable that all wells drilled in the future by this city will have electric equipment. A second well has already been started on this plan. When permanent pump and electric equipment is installed at these new wells, each will be housed in a neat brick and stone bungalow, covered with vines. In this way, the wells will prove an asset both as to producing water and as to appearance.

The forty-four oil-driven wells average about 600 feet in depth, except two that go down 900 feet each. The total possible production of these wells is 10,000,000 gallons a day. A car of fuel oil is consumed every day. The cost is now over $600, as against $200 in pre-war times. The heavy water-consuming period having just passed here, the daily consumption of water is averaging only about 6,000,000 gallons, so that only part of the battery of forty-four wells is being operated at this time. Water consumption here varies from six to as high as ten million gallons a day. The number of meters now in use approximates 10,000. The annual receipts of the system are about $500,000, as shown by the last audit of city accounts. The value of the system is about $1,750,000.

The lay of the land about El Paso is such that no geologic surveys have ever given accurate forecasts as to where water would be found, and often a flow of excellent water will be reached just a few hundred feet from where a poor flow was found. But all tests of water from El Paso wells have shown that it is absolutely free from bacteria. The reason for this fact is that water is never reached here except at comparatively deep levels, in reaching which it passes thru vast natural filters.

The fact that it is a matter of extreme doubt as to where water will be reached has caused the determination to drill all wells in future near the large mains, in order to save expensive conduiting. The plan to be adopted will be the drilling of comparatively inexpensive test holes before the large casing is put down. A collapsible derrick, about 75 feet high and ribbed together by steel plates, has been constructed at a cost of $573 to be used in drilling future wells and test holes.

While all the wells in new locations will probably be of the electrically driven type, if any new ones are put down at the plant where the battery of forty-four are located, they may be of the oil-and-air type, because some of the older wells may soon have to be cut off and new wells in the same locality would use machinery and equipment already installed.

The electrically pumped water itself has an advantage over that from the oil-and-air wells. In the latter, air is sent down to the water level thru a 2-inch pipe and used to force the water up thru the main pipe; the result is that the water is often charged with air and has a milky appearance that is objected to by many people. Water from the electric wells is absolutely clear.

El Paso's water-works system was originally a private corporation known as the International Water Company, but was taken over by the city a number of years ago.

H. P. JACKSON,
Superintendent, Water-Works.

Making a Small-Town Water Department Pay

Goldsboro, N. C.—Contrary to general belief, a small-town water department can be made to yield a profit without charging a high rate to consumers. The Goldsboro Water Department provides free water for sprinkling and flushing the streets, for the City Hall and Fish Market, for flushing the entire sewer system, for fountains and other services at the park and for one hundred and fifty fire hydrants. The hydrant service alone if paid for at the rate paid to the old water company would amount to $6,000 annually, which more than offsets the $5,050 paid by the city as interest on the bonds of the Department.

In addition to furnishing the free services just mentioned, the Water Department paid all its operating and maintenance costs last year and showed a profit of $9,118.30. In this connection it must be remembered that,



PORTABLE METER TESTER USED BY WATER DEPARTMENT, GOLDSBORO, NORTH CAROLINA

generally speaking, the larger a city is, the lower the rate it is expected to maintain. We adopted the rates of the city of Charlotte, which has a population of 35,000 and a water plant costing ten times as much as our own. This rate is low enough to be very attractive to manufacturers and to allow the private consumer all the water he can actually use at a price that is fair and reasonable.

How did we do it? By universal metering, which makes it impossible for anyone to waste water at the expense of his neighbor or of the city. Everyone approves the system when his plumbing is sound, and condemns it only when the plumbing is in need of repair. One item which has operated to reduce the profits of the last year or so is now about completed. This has been the complete retesting of all the meters, so that with the test meter, shown in the accompanying paragraphs, our live foreman, who happens to weigh only one hundred pounds, can test accurately in their regular places ten meters during the time formerly required to take one to the shop for testing and resetting. We test all our meters frequently and find it very profitable, as less than 3 per cent of them run fast, and those that need almost all run-retesting are ning in favor of the consumer.



THE METER TESTER IS EASILY CARRIED

Our operating force consists of two operators working twelve hours each, and the uptown force consists of a foreman and one helper. The plant is worth about $130,000 and has two-and-a-half miles of force main between the stand-pipes and the river, fourteen miles of cast-iron fire mains and two miles of service lines. Our daily pumpage averages 500,000 gallons. We maintain this system and show a profit, largely because we know where the water goes. We are able to do this at the rates shown in the accompanying table only because we have been able to prove to the consumer that sound plumbing pays. The Board of Health certifies the water as pure and wholesome, and so far we have not had a single case of illness attributable to city water.

C. M. GRANTHAM,
Superintendent, Water Department.

WATER RENTS EFFECTIVE ON ALL BILLS PAYABLE

Consumption	Rate, Cents	Gross	Net	Average, Cents
1st 3,000 gallons.....	37	1.11	1.00	.33⅓
3,000 to 10,000 gallons...	30	3.21	2.89	.2890
10,000 to 20,000 gallons...	27	5.91	5.32	.2660
20,000 to 30,000 gallons...	24	8.31	7.48	.2493
30,000 to 40,000 gallons...	21	10.41	9.37	.2342
40,000 to 50,000 gallons...	18	12.21	10.99	.2198
50,000 to 100,000 gallons...	12	18.21	16.39	.1639
100,000 to 200,000 gallons...	11	29.21	26.29	.1314
200,000 to 300,000 gallons...	10	39.21	35.29	.1176
300,000 to 400,000 gallons...	09	48.21	43.39	.1085
400,000 to 500,000 gallons...	08	56.21	50.59	.1012
500,000 to 1,000,000 gallons...	07½	93.71	84.34	.0843
1,000,000 gallons and over.....	07½			

Domestic bills collected quarterly. Power bills monthly. Discount of 10 per cent allowed on all bills paid before 6 P. M. of the 10th of the month. Minimum charge, domestic consumers, 60 cents per month, allowing 1,621 gallons.

Curb Markets in Large Cities

Lessons Learned from War-Time Experience with Hucksters' and Farmers' Markets in Pennsylvania

By A. B. Ross

IN one of the great food conventions in Philadelphia in 1917 a delegate remarked that apparently the cities which had curb markets wanted to get rid of them, while those which had not, wanted to get them. And there was a measure of truth in the statement.

THE AMERICAN CITY is not a magazine of retrospect; ancient history is not in its line. The present article is written not to tell the story of the fifty-odd curb markets started in Pennsylvania as a war measure, but to measure the value of the curb market in the future of our progressive cities.

Typical Results

The markets of 1917 in Scranton and Allentown resulted in a trebled production of fruits and vegetables for the curb markets of 1918. In Allentown the original two markets became five; in Scranton the three expanded to seven, in the second year.

In Scranton the 1918 market opened early in August. The day before opening day, prices were taken all over the city, for comparison with the curb market prices. The curb market prices ran from 80 per cent to 33 per cent of those charged at the stores. In Allentown it was estimated by the very able man in charge of the markets that the average price of perishables was 20 per cent below that of other near-by cities, after the curb markets were opened. Both in Allentown and Scranton the consumption of perishables was enormously stimulated, and the reaction is reaching back to the farm in a most satisfactory way. Records of the Scranton markets kept by the Food Administration show total sales over the curb of not less than $350,000 worth of food, involving a direct saving to consumers of from $70,000 to $100,000, and an indirect saving, thru bringing down prices generally, impossible to estimate, but undoubtedly much larger than the direct saving.

These markets are typical illustrations. There is no intention of abandoning them. Instead, it is the purpose to establish further regional curb markets. The appre-



THE FIRST CURB MARKET AT ALLENTOWN, PA.

This picture of the opening day shows the fine result of a thoro campaign conducted by the Allentown Chamber of Commerce

ciation of them on the part of the farmers and the people is universal. They have become institutions.

Hucksters as Selling Force

In November, 1917, the Pittsburgh newspapers ran a bitter campaign against the high prices of food, so bitter as to require action. It was late in the season, and a farmers' curb market was impossible; we had to do the best we could with material which looked unpromising. It was, I believe, the first effort made in this country to establish a curb market using only licensed hucksters as the selling force. Within a week after my arrival at Pittsburgh we held our first market, and it was a great success. A vacant lot of large dimensions was borrowed from the city authorities and staked off; a path was roped in the center, and hucksters were permitted to sell without charge or special permission. Within a few days this market had swollen so that on a single market day over a hundred loads passed, at very reasonable prices, from huckster to consumer. The market was within three blocks of the produce yard, and teams went back and forth for loads, single teams handling as high as four loads on a market.

Later six other regional markets were established and flourished briefly. The intense cold brought the markets to a close shortly after Christmas. However, they had served their purpose well.

The original Pittsburgh vacant lot market was opened in the spring of 1918, was gradually built up under adverse conditions, and still runs. Other markets have been opened in Pittsburgh this year, with greater or less success.

Starting the Philadelphia Curb Markets

The experience gained in the study of the various markets I had started thruout the state (over thirty-five in all) had equipped me for starting the final and most successful of all—the four great curb markets established in Philadelphia in August, 1918. There had been many efforts to establish curb markets in Philadelphia in the last decade. All had failed for one reason or another; and failure was freely prophesied for the markets attempted by the Food Administration. We did not make the blunder of trying to establish farmers' markets, altho that was what the newspapers called them and what they were supposed to be. After a careful investigation of the situation as to farmers, I decided that the farmers' end of the market must be a gradual growth; that we must start the Philadelphia markets with the hucksters as the chief selling force.

The first market was an immediate success. The fact that it was almost wholly attended by hucksters raised a cyclone of protest from buyers. We met this storm by asking the buyers to compare curb prices with store prices and to give us time to get more farmers in. This market was triweekly; and by the third market the protest was a thing of the past. The market had justified itself by the tremendous difference between its prices and those of the stores. We got the same protest on all the markets as they were opened, but it was much feebler and more short-lived.

The farmers came in slowly. We put up signs, to protect the farmers, who could not compete in prices with the hucksters, and whose prices, by the way, were entirely too high at first—quite as high as those of the retail stores. That was the reason why we did not attempt to start the market as a farmers' market—we knew from experience that the farmer's price would be a disappointment. But we put up signs—"Farmers' Section" and "Dealers' Section," with hands pointing in the right direction; and left the farmers to deal with those who preferred fresh stuff at higher prices. Their prices gradually dropped, and their business grew steadily until the farmers' sections on all the markets became highly important and very promising. They are most anxious for the same chance in 1919.

In starting these markets, I picked out the best grade of hucksters, the men who controlled several wagons and a selling force large enough to play the opportunity big. We had learned at Pittsburgh that an "unlimited" market quickly resulted in an oversupply of stuff and ruinous competition, and that, under such conditions, the best men would not stay by the market. Yet it was impossible to give the privilege to one man and refuse it to another. To meet this difficulty I limited the length of the market —automatically limiting the number of teams. Cards were issued, stalls were num-



A PART OF THE CURB MARKET AT KENSINGTON, PHILADELPHIA
This market handled considerably over 100 mammoth loads of stuff twice a week

bered, and the huckster's right to his stall was protected so long as he did not miss a market. His card was O. K'd at each market and presented at the next.

Under this system, single hucksters hired extra teams and handled from three to twenty loads on a single market. The crowds were enormous, the buying quick, and the sales force required was relatively small because of the buying temper of the crowd. Under these conditions the margin charged by the hucksters was close, yet their total profits were very attractive. The man who had been tramping the streets all day with a helper to sell from $40 to $60 worth of stuff, found his day's receipts running from $200 to $500, with only one extra helper.

Prices and Quality of Goods

No serious effort was made to regulate prices, but when a man was found charging too much for a particular article he was told what it was selling for elsewhere on the market, and invariably changed his price. Instead of resenting the implied direction, he welcomed it; the hucksters were anxious to hold their places and their trade on the market.

Price tags were ordered in lots of 10,000 to 20,000. These tags showed the quantity —½-peck, peck, ½-bushel, ⅝-bushel, etc., and the price was filled in with black crayon. The hucksters were at first required to use these tags which we prepared for them; but they soon found that the value of the tags as sellers was very real; and then, when the price tag artist didn't get around on time, complaints began to come in. A charge of 10 cents per market was made to each huckster for the price tags and service, which enabled us to break even with that expense.

The hucksters early developed a tendency to bring inferior stuff to the market, particularly on their first appearance. I called their attention to the fact that such stuff did not sell, while good stuff moved rapidly, and that weakness quickly corrected itself. During the height of the market the women said that the stuff sold on the curb was better in quality than that sold at the stores.

The city handled the clean-up after the markets without charge, and gave us splendid police protection and aid. Once in a while I found it necessary to use the police to handle some obstreperous huckster,—but not often, especially after the clan found

we meant business. As a rule the hucksters played fair and were on their best behavior, and enjoyed it.

An Unannounced Market

In starting the markets we supposed that the greatest aid was the thousands of letters sent out by the Food Administration to the families in the neighborhood of the site selected. But we had one experience that did not support the theory that this was necessary. Thru some office blunder the letters announcing one of the markets did not get into the mails in time, and the newspaper stuff not at all; and we opened this market with forty teams and not a word of notice to anyone. The women from near-by began to come out with baskets when they saw what was going on. We promptly assembled them in small groups, asked them to drop their work and get around among their neighbors, and when the latter came we did the same missionary work with them. Inside an hour and a half we had a very active market, cleaned up the forty loads and had to send posthaste for more.

Some Plans That Worked Well

One market rule I established for a purely psychological reason. On the midweek markets there was a tendency to "load light." Now, a fellow who loads light is not going to charge light. The right to stall room was a valuable privilege, and the new rule required that every wagon should be "loaded to the roof." The man with the heavy load started his prices at the proper level in order not to have to tramp the streets in the afternoon.

In selecting the curb market sites in Philadelphia we paid no attention to the nearness of business centers. We were bringing food close to centers of population. We got into those centers in which the character of the people and the houses indicated that we had a "curb-market crowd" handy. While the street cars brought large numbers of people, the markets depended for much the larger part of their support on the neighborhood. We also selected for sites a vacant side of a street. In three cases we had a big stone wall with a broad pavement as the background of our market. On this wall we marked out our stall numbers, and against it we stacked the baskets of stuff for sale. The hucksters were allowed to call their wares to their hearts' content. Crowds and the calling of prices make selling brisk.

We established complementary markets in pairs. Two of the markets were on Tuesdays, Thursdays and Saturdays; two on Wednesdays and Fridays. Each huckster had stalls on complementary markets, so that if he had some stuff left over at closing time on one day, he could hold it for the next day's market if he wanted to do so. Also, the five markets a week corrected the tendency of the huckster to travel the streets, by giving him a full week's work.

Every morning for six weeks, while these markets were shaping, I went down to the wholesale district, looked over the supply, got prices, and talked with the hucksters to find out what each was taking, so as to make sure that the markets would have a full supply of everything. The wholesale district opened at 4 A. M., the markets at 7:30; and it required some hustling to get the market planned in time. During the height of the season (before frost) the average daily attendance at these curb markets was estimated at 20,000.

Just how much saving resulted to the consumers it is impossible to say. It must have run into the hundreds of thousands in direct saving, and in indirect saving very much more, as the reaction of the curb markets on retail prices generally was very quick and very strong. The wholesale district was kept pretty well cleaned up. Thousands of people put up beans, tomatoes, peaches, plums, etc., who would not have been able to do so but for the curb market. Little express wagons were in evidence everywhere, and the juvenile delivery partnerships and quasi-corporations did a thriving business.

A very prominent Philadelphian said of these Philadelphia curb markets that they were the most important thing which had happened in Philadelphia in a decade or more. What will happen to them with the dissolution of the Food Administration is in the lap of the gods. One thing is certain, however,—they will not be abandoned without a vigorous protest from the women of Philadelphia, who swamped us with petitions for regional curb markets in other sections of the city, and who are determined to have them next season.

What the National Bureau of Standards Is Doing for American Municipalities

By Waldon Fawcett

ADVISOR on myriad municipal perplexities for which heretofore there has been no counselor to lend ear or give aid—this is a function of the National Bureau of Standards, albeit one might not exactly suspect it from the name. Is a city government unable to decide on the best method of testing the accuracy of water meters? Is there perplexity as to specifications for fire hose for the use of a local department? Are public officials in dispute with public utility corporations regarding the service rendered the community? In all such dilemmas the municipal official may turn confidently, if he will only bear the fact in mind, to the U. S. Bureau of Standards for advice and assistance.

It would be unjust, doubtless, to say that these facilities have not been fully used by city makers and city administrators because the service is free, or, if tests are involved, is to be had for merely nominal fees. A much more plausible explanation is that in municipal circles there is just dawning a realization that the "missionary work" of the Bureau of Standards in behalf of city service is something very different from the mere physical testing for which municipal officials have been wont to turn to commercial laboratories in their respective communities. To readers who have been somewhat familiar with the work for which the Bureau first established a reputation, it may appear that its later function in aid of the regulation of public utilities is a case of the tail wagging the dog. However, the officials of this unique governmental institution are of the opinion that standards of measurement, of quality and of service in public utilities are of quite as much importance to municipal servants and to the every-day city resident as are correct weights and measures in municipal markets and accuracy in public scales.

Original Activities

With that branch of the work of the Bureau of Standards suggested by this last reference, many municipal workers have be-



ADMINISTRATION BUILDING OF THE UNITED STATES BUREAU OF STANDARDS
This is rapidly assuming the status of a great information bureau for American municipalities



TESTING ELECTRIC LAMPS AT THE U. S. BUREAU OF STANDARDS
One of the services which Uncle Sam performs for the benefit of municipalities

come familiar, since the home of the Bureau has served in recent years as the scene of the Annual Conferences on Weights and Measures which are attended by so many sealers of weights and measures, superintendents of markets and other municipal officials.

The work of the Bureau of Standards with respect to trade weights and measures may be said to represent its first point of contact with municipal activities. The law that created the Bureau charged it with the preservation and care of the standard weights and measures of the National Government, and almost from the time of its establishment in 1901 it began to receive inquiries from municipal and state officials for information, advice and assistance concerning weights and measures. These inquiries disclosed a woeful lack of standardization in many common measures of quantity, such as the barrel and the bushel, to say nothing of boxes, crates and baskets. It was that revelation that begot from Congress the special funds that enabled experts from the Bureau to visit hundreds of American cities in forty-six states and to inspect many thousands of scales and measuring apparatus. The information thus gleaned and kept up to date by first-hand investigations from time to time has not only served the Bureau in good stead in its own work, but has enabled many valuable hints to be given to cities desirous of drafting or perfecting their ordinances on this subject. During one year the Bureau tested 3,355 weights, a very large proportion of these being subjected to scrutiny at the request of cities.

Scale testing as carried on by the National Bureau of Standards is of the utmost importance to municipalities because this institution possesses facilities that render possible tests that would otherwise be out of the question. For example, there is the apparatus designed primarily for testing railroad track scales, but which is equally useful in checking up other large scales under municipal jurisdiction. The apparatus consists of standard test weight cars which cost the Government about $20,000 each, and which may be sent to any point reached by a railroad in order to turn the searchlight on scale performances. One year the test cars visited, for test work, 86 different cities and towns. Latterly the Bureau of Standards has turned its attention to auto truck scales and has prepared stand-

ard specifications. Indeed, that is one of the most valuable services performed by the experts at the Bureau—the preparation of authoritative specifications which are followed by all branches of the United States Government in buying for the public service and which may usually be followed with equal confidence by officials who are charged with the responsibility of buying for municipalities.

Without question, one of the most valuable efforts of the Bureau of Standards, from the view-point of municipal interests, is shown in the attempt to find a means to reduce the damage from electrolysis. Ever since the advent of trolley systems, municipal officials and public service corporations have been greatly disturbed by the electrolytic damage sustained by gas and water pipes, cable sheaths, sewers and other underground metallic structures due to the electric current, as it flows thru the earth back to the generating station, usually coming from street railway systems. The economic importance of the electrolysis problem, together with the indirect life and fire hazard due to electrolysis, have caused the Bureau to carry on extensive studies in this field for the last six years. Electrolysis surveys have been made in over a dozen cities, varying in scope from preliminary tests to detect the presence of electrolysis, to complete surveys with the design of mitigative systems. The work in Springfield, Mass., Springfield, Ohio, Elyria, Ohio, and St. Louis is especially illustrative of this activity. Within the last two years the Bureau has made surveys in Hamilton, Ohio, Omaha, St. Paul, Duluth, New Orleans and Milwaukee. These surveys are sometimes made with the active coöperation of all the interested parties, and the success of the results in such cases depends in part upon the fact that all of these parties come to understand the existing conditions and the necessity for the improvements recommended. In Milwaukee the investigation was made at the request of and under the authority of the Railroad Commission of Wisconsin. It was formerly frequently the case, where damage from electrolysis had resulted, for the injured party to bring suit against the utility, with a consequent litigation which resulted in delays and injunctions, not in the least remedying the situation. The Bureau of Standards has felt that the situation was one requiring the application of technical knowledge to a technical problem, and that it was a question of how to remedy the trouble at the least expense to the utility companies and the municipalities. Altho the trouble has been cared for satisfactorily in a considerable number of places, there are very many other cities where little or nothing has been done where the trouble is present and growing worse. The Bureau has also been engaged in carrying on laboratory work in conjunction with the field work to obtain the basic data necessary for intelligent action in solving the problems which arise.

Public Utilities Investigations

Uncle Sam's latest labor of love in behalf of municipalities was all but forced upon the National Bureau of Standards by the numerous requests received from cities in all parts of the country asking for a Federal study of the fundamental factors that underlie the operations of public utility companies. It is evident from the correspondence reaching Washington from municipal officials that there has been widespread a feeling that the public utility companies have been much better informed than have the city officials regarding the technical facts concerned in their operation. Indeed, it has often been declared that no small city has the equipment or can afford to spend the money to gather such inside information. Hence the insistence that the national government come to the aid of the municipalities and determine standards of operation so that public service commissions and other regulatory bodies may have at their disposal for the first time definite standards of operation by means of which they can regulate the public service.

Now this task of rendering municipal "first aid" has been entered upon, altho the governmental institution has as yet little more than "scratched the surface," because thus far only about $50,000 per year is available for the work. Dr. S. W. Stratton, Director of the Bureau of Standards, has visions of much more elaborate machinery for investigating work covering the whole field of public utilities (other than the steam railroads). Considering the fact that the people of the United States spend about $2,000,000,000 a year for telephone,

as, electric light and power, electric rail-ay transportation and other urban neces-ties, he figures that such research would e worth, in the aggregate, to our munici-alities not less than $100,000,000 per year, r 5 per cent on the two-billion-dollar out-y above mentioned.

Incidentally, the head of the Standards ureau believes that Federal assistance to iable the cities to judge of the quality of ie service rendered by their utilities will ert a favorable influence upon municipal overnment. Speaking of the prospective enefits in this direction, he recently said:

"Unregulated utilities sometimes control mu-cipalities; improperly regulated utilities are metimes forced to resort to questionable ethods in self-defense. Public officials harged with the duty of regulating public ilities, but not provided with means of doing equitably and effectively, are almost help-ss."

As to the need for a national clearing ouse for information that will enable mu-cipal arbiters to gauge their exactions ith respect to public utilities, the Bureau f Standards executive says:

"It will obviously never be practicable for ny city to handle these questions alone. Tho ey possess large and able engineering staffs employ specialists for each separate prob-m, the question of what is good service or hether the service in any given case is ade-iate, safe and satisfactory can only be settled reference to what is done under similar cir-mstances elsewhere in the country."

While recognizing the value of the very xcellent work performed by institutions ich as the Utilities Bureau of Philadelphia, ie feeling of the experts at the U. S. Bu-au of Standards is that it is desirable that ie National Government do at least a por-on of the work necessary to establish a asis of relationship between municipalities id public service interests. Maybe the tandards Bureau officials are prejudiced in avor of their own institution, but they ke the view that the rank and file of merican cities are bound to call on Uncle am for standards of public utility service, for no other reason than that few state ublic service commissions will ever be like-to have a force of engineers and inspec-rs large enough to shoulder the whole urden and relieve the municipalities of all esponsibility.

Research in Many Other Municipal Problems

Aside from the electrolysis work of the tandards Bureau—as evidenced in such tangible form as by the electrolysis surveys made in more than a dozen cities—the record of actual achievement to date in the municipal field includes the betterment of regulations and standards for illuminating gas; a probe of gas meters; "life tests" of incandescent electric lamps; and a test of fire hose, submitted by various manufacturers under competitive bid, that enabled the municipality that requested the test to save fully 50 per cent in the cost of the hose without sacrifiing anything in quality or efficiency. The Bureau is conducting an investigation of paper for permanent records, the outcome of which should mean much to municipal officials and the keepers of city archives, and there are in progress exhaustive tests of brick and tile that hold significance for certain municipal administrative departments in the average community.

The entire cement and concrete testing program at the Bureau of Standards—and it is a most extensive one—is conveying morals and messages to municipal engineers and other public servants who are susceptible to the influence of this "age of concrete." Among the subjects to which attention is being given, there may be mentioned the drawing of standard specifications for cement; the effect of moisture and temperature changes on concrete; the strength of reinforced concrete structures, etc. Requests are constantly being received from municipal administrative sources for advice on specific problems connected with the laying of concrete sidewalks, and the waterproofing of concrete destined for use on public docks, etc.

Inspection departments of cities receive much help from the U. S. Bureau of Standards. As indicative of the character of the assistance being rendered in this quarter, there may be cited the work of the Bureau experts in the preparation of a national electrical safety code and other safety codes. The importance of having national codes, uniform in all states, has been recognized as quite as important for safety rules as for reducing the fire hazard. A number of the most capable municipal engineers and municipal inspectors in the country have been coöperating with the National Bureau to secure codes that would have the prestige of an unbiased national agency. The work designed to bring about the millennium in the matter of national safety codes is yet far from being a closed

incident, but municipal inspection departments will soon be in a position to sense the benefits of uniform rules for electrical equipment and lines and for the piping of buildings and the installation of gas fixtures and appliances.

For several years the Bureau has been studying the question of standards for electric light and power service and the requirements that should be made by cities and state commissions of public utility companies furnishing such service. The results of this study have been published in the form of a circular. This circular was prepared with the coöperation of public service commissions and engineers of operating companies and represents accepted good practice in electric service regulation and operating experience.

Similar studies of heating, water, street lighting and telephone service are planned and have made more or less progress, altho no publications in these fields have been issued.

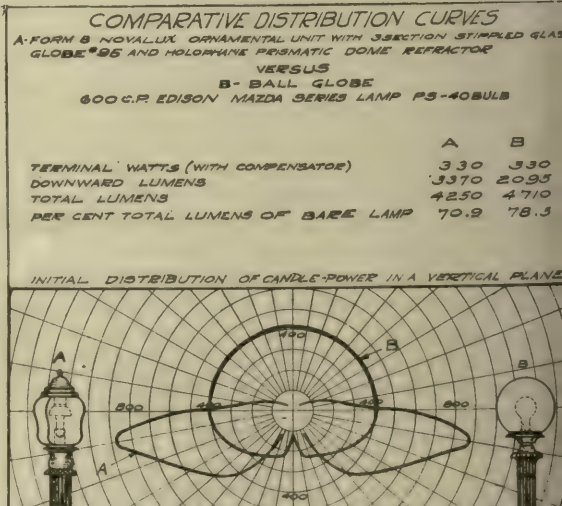
In all this public utility work it is noteworthy that the Bureau of Standards serves as a clearing-house of information rather than a source of arbitrary authority. neither has nor seeks administrative pow its recommendations carry with them authority other than that given them their intrinsic merits and the reputation the Bureau as an unbiased agency for study of these problems. The gene policy of the Bureau in disputed cases is find out and set forth as clearly as possi the underlying facts, and to assist in bri ing into conference all parties concern as it is believed that when the facts known a just decision is more likely to reached by agreement than by resort to usual processes of court action. This p cedure has had especially gratifying sults in the rather complicated field electrolysis, where it has been found p sible in some cases to reach solutions whi instead of involving expense, were a sou of profit to all parties concerned. While happy a solution cannot be expected many other cases, the principle of havi technical and engineering problems sett by technical men thru investigation a discussion, rather than by legal cont versy, is the essential basis of the Bureau treatment of all these problems.

A Utilitarian Unit for Street Lighting

By S. L. E. Rose and H. E. Butler

NO one recognizes the need for thrift more than the managers of public utilities, who are exerting every effort to curtail the waste of electrical energy and effect a direct saving at the coal pile. Much electrical energy is wasted by the use of old or obsolete lamps and by the use of lamps not properly equipped to direct the light in useful directions. The use of old-type lamps at the present time is inexcusable. They should be replaced by modern high-efficiency lamps, which give two or three times as much light for the same energy.

Great economy in street lighting is effected by directing a large proportion of the light in a downward direction onto the



reet and spreading it out so as to illumi-
te the space between units.

The foregoing applies to "utilitarian" ghting rather than to "ornamental" white ay lighting in business districts, where e units are usually spaced relatively ose and the upward light is useful in ghting the building fronts, which in turn flect some of this light back onto the reet. Even in the latter case the unit ould give more light below the horizontal an above it.

The term "utilitarian," when applied to a street lighting unit, generally means a unit which hangs pendent, fed from overhead lines, and equipped to deliver practically all its light in the lower hemisphere. The term "ornamental" generally means one that is more or less ornate in design and appearance, mounted on top of a pole or bracket, and fed from underground circuits. The first type is the one in general use for street lighting thruout the country, and its purpose is to deliver the most light on the street surface for the least expenditure of money.

Distribution of Population Graphically Presented as a Basis for City Planning

By Frank J. Mulvihill

THE mention of the word "city" brings to the mind great numbers of individuals attracted to a relatively small ea of the earth's surface. Such aggrega-ns create problems which are the concern agencies,—industrial, commercial, polit-l, educational, religious, etc. Each in its ld at some time or other would find it lpful to have convenient access to a map its city with information showing where e city's population is. If shown graphic-y, the information is comprehensive and nvincing, facts replacing supposition.

The value of such a map is perhaps diffi-lt to measure; furthermore, it has an un-nited variety of uses. From the view-int of city planning alone, population dis-bution maps are of considerable assis-nce in studying problems of circulation in e city, of proper terminal facilities to be ovided, in the provision of transporta-n lines and highways to adequately meet e demands of traffic, in the proper dis-bution of schools, parks and playgrounds. ngested areas are seen at a glance, and a sis for zoning or districting is available. No great difficulties are experienced in e actual making of any population dis-bution map after the proper information available. The latest and best data as to pulation figures may be found in the fol-ving: U. S. Census, every ten years; S. Census every year, for cities 30,000 pulation and over; state census five years after each U. S. Census; school census; Tax Assessor's list; Register of Voters' list; Water Department services list; house number lists (City Engineer's office); city directory; police census; actual census count. The relative distribution of population will coincide with the distribution of dwellings. For information in this connection there may be available: fire insurance atlas; real estate atlas; street and house directory in the city directory; Tax Assessor's list; Registry of Voters' list; Water Department services list; house number list (City Engineer's office); actual canvass.

After securing the population and relative distribution, transfer the information to the best latest map of the city. Use one dot for every ten or twenty-five persons; a dot for every one hundred persons is not advisable except for cities having large population.

The best basis for an accurate map is naturally an actual census count for this purpose only. The organization for this might be very simple. Divide the city into districts. Assign to a census-taker a district, or several blocks in each district, until the entire city is allotted. Each census-taker would be furnished with a large-scale street-and-block plan. He would inquire at each house the number of occupants, and tally them in their relative location on his diagram. Each blank would be completed, and so for the entire city. The

information, when collected, could be transferred.

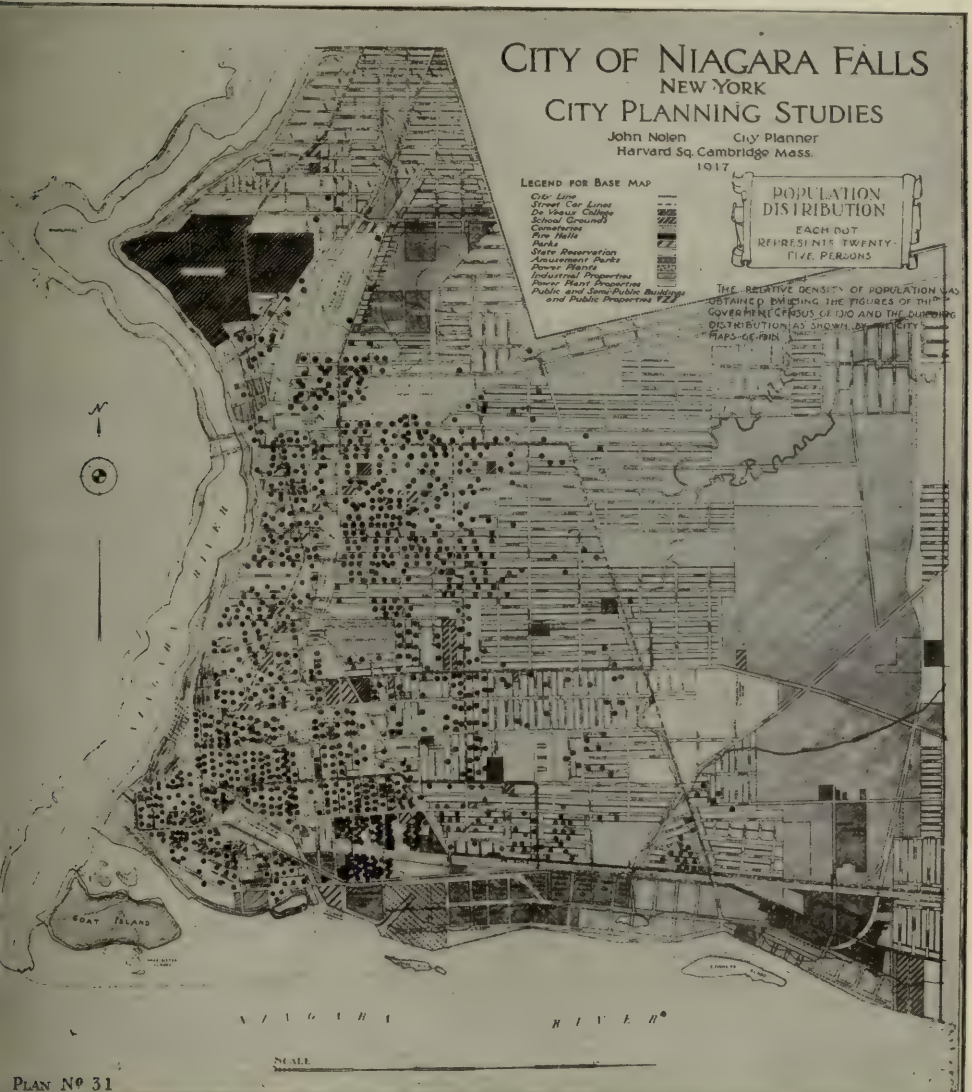
The method of presentation is not limited to "spot maps," such as illustrated. The spot map is perhaps the best and most readily understood.

One dot represents ten persons. This map is based on an actual census count made in 1917. A company contemplating a contract with the city for the disposal of garbage found it useful. In this particular problem daily tonnage, distance of hauls, frequency of collection, routes and number of teams, and other questions depend to considerable extent upon the population, density and distribution. It will be observed that the greatest density is near a factory area, a large automobile plant, indicating a desire of the working man to be within walking distance of his employment. On the right of the river and near the lower end of the same industrial area notice the tendency to congestion near the bridge, crossing the river, which latter separates factory and home.

If the density of population is known for ach acre of the city area, divisions may be ıade into areas under: ten persons to the cre; ten to twenty persons to the acre; wenty to thirty persons; and so on. The se of distinct colors or different cross-atching will distinguish areas of different ensities.

Another method of presentation is known s the "spot height" method, the final re-ult being a contour map. The method is amiliar to city engineers or surveyors who make topographical maps. The maps issued by the U. S. Weather Bureau are examples of this method. The contour lines in a population map will be drawn thru points having the same population density, resulting in a series of islands, bays and tongues.

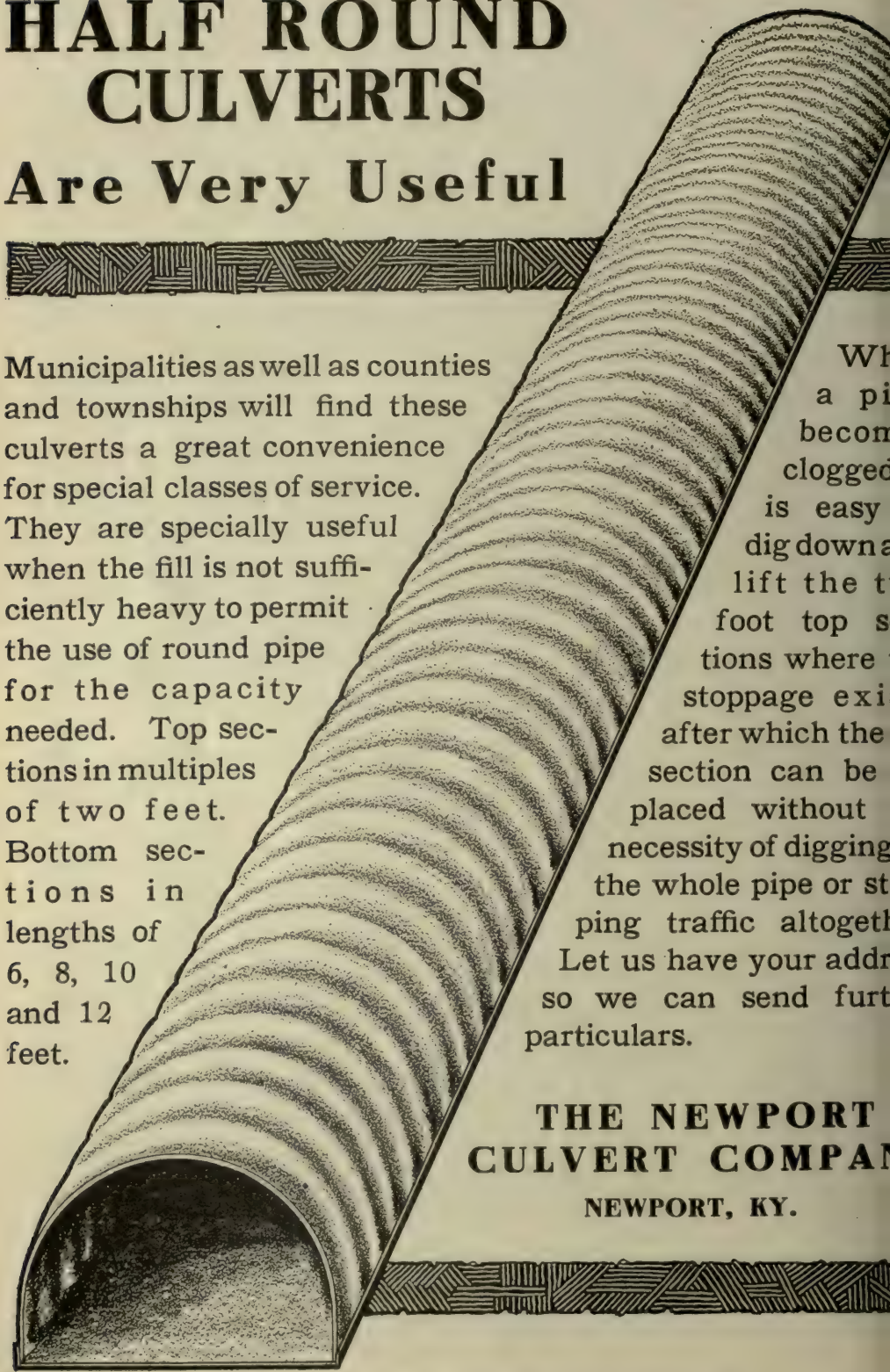
If at different intervals a new population distribution map is published, comparison one with the other will permit some interesting conclusions relative to the growth and progress of the city and its population.



Each dot represents twenty-five persons. A city map gave the distribution of buildings. The best and latest available figures were according to the U. S. Census for 1910, giving the population by enumeration districts. On a city map the enumeration districts were indicated and the total numbers of houses secured for each district from distribution of buildings map. The ratio of the population compared with buildings was secured. The dots representing the population were then located to correspond to the relative building distribution.

HALF ROUND CULVERTS

Are Very Useful



Municipalities as well as counties and townships will find these culverts a great convenience for special classes of service. They are specially useful when the fill is not sufficiently heavy to permit the use of round pipe for the capacity needed. Top sections in multiples of two feet. Bottom sections in lengths of 6, 8, 10 and 12 feet.

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THE NEWPORT CULVERT COMPAN

NEWPORT, KY.

What Shall We Substitute for the Saloon?

By John Collier

Director, The Training School for Community Workers, New York; President, National Community Center Association

THERE will be much thought about substituting for saloons, in months to come. I am making here a few ntative suggestions—facts and thoughts hich may be useful to some thinker or orker.

I have frequented saloons in Italy and rance, in Germany, England and Ireland, d in many American cities. The problem sumptuary regulation has interested me, t I mention here only certain good things ich I found in all but the worst saloons—e worst saloons being those which had en subjected to the largest amount of sjudged sumptuary interference.

An Estimate of the Saloon

Concerning Latin saloons, it is enough to ention Tolstoy's estimate of the French fé, rating it higher as an educational in-tution than he was willing to rate the mpulsory schools of France or England. ere is another side to the story of Latin fés—cultivation in them of sundry dubi-s folk-ways, the growth of the use of bit-forming drugs under the influence th of contagion and of profit.

My observation of the American saloon as follows: Those who stay in it a long ne and who come back every day gen-lly consume beer. They do not consume ch beer. This means, that a large ele-nt in their reason for being there and for ying there is something other than a drug ect. Gregariousness; the mere necessity such mental activity as human discourse kes possible; the combative instinct, and emotion which is known as positive self-ling, which is gratified by protecting an-er or patronizing him or talking well, or any way measuring up to group stan-rds or demonstrating one's excellence—these states of mind are at work in even most casual saloon gathering, and beer it is now brewed can but little facilitate emotional flow in any of these par-ulars.

must again refer to the Latin countries. ere is a type of café, called the Popular iversity, in which a definite purpose op-tes, to nourish the intellectual life and to guide the thought of everyone toward public questions. I do not believe the amount of wine used per capita in the Popular Universities is much less than the amount per capita in the commercial cafés, but the relative importance of alcohol in the total stimulus of the place is infinitesimal. It probably figures less, whether as a social habit or a physiological agent, than tobacco. The Popular Universities are, of course, places for both sexes, and parents bring their children with them. They are self-governing institutions with a dues-paying membership, but others than members are welcomed.

The Problem Stated

Now, I am taking it for granted that the saloon, as a legalized place where alcohol is dispensed, must disappear almost at once. When one's enemy is beaten, it behooves one to become at least judicious regarding his enemy's qualities. And everyone who knows the problem of industrial cities must be troubled to answer this question: "Where are these millions of men going, whose saloon habit is constantly nurtured thru real spiritual life which they get in the saloon and which many of them get nowhere else? And for that element who are accustomed to modify their state of consciousness with alcohol, what substitute, if any, shall be found? Shall it be a chemical or a social substitute?"

The question could be stated in another way: "What is to be done with these human motives, mentioned above, which are operative in saloon life; which are a greater or less cause of the expenditure in New York City alone of perhaps a hundred million dollars a year for the support of saloons? Are these human motives to be simply dissipated, or are they to be converted, transposed, and exploited toward social good?"

Facts Which Must Be Considered

I am here stating merely a few elements out of which a solution of this problem might be attempted.

(1) For most men, Nature has provided

Roots clog up your sewers

and catch and hold the filth which breeds disease.

The Recent Epidemic

has taught municipalities as never before the importance of cleanliness and sanitation in every department of city work.

Laying Sewers Is Not Enough

you must keep them clean—prevent their becoming clogged with roots, grease, tar and other material which have a tendency to obstruct the flow of sewage.

Filth-laden sewers are ideal breeding places for a thousand and one kinds of disease germs. The people living in towns or cities where this condition prevails are always in danger of an epidemic, not to mention the suffering caused by frequent foul odors which belch forth from these sewers.

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the physiological alternatives for drugs. Strong emotion and activity-excitement, as we now know in ways absolutely precise, do things to the nervous system, both directly and thru the medium of internal secretions and blood and lungs. The various results purchased thru drugs—stimulation, narcotization, the shifting of the threshold of consciousness, oblivion toward worries, the annihilation of self-consciousness—all these results are purchasable thru human intercourse, thru combat-games, dramatics, thru participation in choruses, thru oratory.

It is merely necessary to shift our game and art habits across from the predominantly receptive and passive way of looking on while another does, to the predominantly active way of doing on one's own behalf, of doing in a group. Such a shift is practicable, not only for children but for adults, and drugs would become negligible in the mental economy of most people if this shift were accomplished.

(2) The saloon is a place of unequivocal freedom. It tolerates idiosyncrasies. Even the surly man is let alone, while it is still conventional to embrace one's neighbor. This freedom is basic to all successful leisure institutions. Most leisure interests are and should be ends in themselves; the ulterior product, in terms of civic education or public work, should result from the way in which spontaneous leisure is organized, and should not be obtained thru a Calvinistic forcing-down of utilitarian considerations upon the pleasure interests.

Rarely do our institutional churches, or community centers, or any of our deliberate play institutions, meet this condition, which is prerequisite to all success in the leisure field.

Many of our playgrounds and recreation centers for young people do meet it. But because we have no intelligently organized leisure encompassing the whole population, the child is graduated from his play groups and play habits much as he is graduated from his day-school. He passes across into a wholly different world, and John Dewey's valuation upon an activity is reversed in the child's experience. Dewey says in effect: "That activity is worth while which normally leads on to an activity more worth while." The worth-while activities of our children lead to a psychic graveyard, where the child begins to be buried when he goes into the industrial world, when he marries, when he is spiritually sliced up by the lethargic and specialized ministrations of commercialized amusement.

It is possible to give this basic freedom, but it will not be easy to change our age-old social habit, thru which we are first Pharisaical toward the other, until after a while we become Pharisaical toward ourselves. The Pharisee is one who "binds burdens on others," but soon the other pays back his debt, inasmuch as our personal consciousness is so largely a reflex of the "other" who surrounds us.

(3) We must not expect to substitute for the saloon without providing capital investment, altho this capital investment could undoubtedly be made an economic investment. The capital investment must go to equipment, advertising, and last, and most important, leadership.

The technical methods thru which the leisure of all people can be organized joyously, creatively and usefully have been worked out in many places, for all age groups and for almost every sort of temperament. It is in society's power to-day to assemble this technical knowledge, these play forms and art forms which have been proved to be efficient, and to apply them with assurance of immense results no less certain than the results which flow when physical engineering is adequately brought to bear on the physical world.

To substitute for the saloon, which means to discover its meager values, now enjoyed by the few, to enlarge them and give them to the many, to add the values of organized play, organized discussion and coöperative art, and to build a leisure life around these values—to do this, which we can do if we will, would be to create a new civilization. Probably it is the leading issue of the generation ahead of us.

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Liberty Bonds for Liberty Buildings

By Henry E. Jackson
Special Agent in Community Organization, United States Bureau of Education

Community Memorials

THE memory of a great past is the inspiration of a great present, and the country which honors its great men has the prospect of producing more in the future. The gratitude of free people will undoubtedly lead them to erect some kind of memorials to the heroic men who in this war sacrificed their lives that liberty might live.

The memory of the dead will be kept greener if their memorial renders continuous service to the living. There is a growing conviction that the conventional stone shaft placed in a graveyard among the dead is not a fitting memorial to those who died for freedom. The suggestion, made both in France and America, that these memorials take the form of community buildings, dedicated to civic and social uses, is obviously wise and ought to meet universal approval. On the wall of such a building should hang a bronze tablet containing the names of each community's martyrs to liberty.

The Roll of Honor

This type of memorial will guarantee that no boy who gave his life for justice and freedom will be forgotten. The number of American lives lost in this war is very small in comparison with those lost in the Civil War. If a community lost only three or four, it might not think it worth while to build a monument. But a community building is needed entirely apart from its memorial purpose. As pointed out by THE AMERICAN CITY in suggesting this type of memorial last September, its chief advantage is not that it is economical, but that it keeps green an inspiring memory and seeks to put into operation, thru its civic and social activities, the ideals for which our boys fought in France.

No type of memorial could be more logical or more fitting. A memorial building or auditorium used for community purposes might be suitably called Liberty Hall. Since applied democracy is the idea which the building commemorates, its bronze tablet should contain not only the names of the boys whose bodies lie under little white crosses in France, but the names of all boys who fought in behalf of this idea. They were potential martyrs and were willing to die with their comrades. Moreover, by the side of the names of the boys who made the supreme sacrifice should be placed the names of their mothers. The mothers of these martyrs have rendered a conspicuous service to the cause for which their heroes fell. They furnished the heroes. In their loss they have already suffered more than the boys, and they will bear an additional burden of loneliness and hardship down the long trail of the future. While we remember the heroic boys, it is unfair to forget their equally heroic mothers.

Bonds for Buildings

Funds for this purpose could be raised more easily if they were raised in the form of Liberty Bonds during the Fifth Loan, which is to come in the spring. The bonds can be used as money when the time comes to build. Thus a community can serve itself while at the same time it is rendering a national service. By this method more money for the Government could be raised than by any other. Not only would many individuals gladly contribute an extra bond or two for the benefit of their local community, but many who could not do this could pool their small gifts and contribute to a bond. Likewise, entertainments and social activities can be utilized to raise money for the same purpose. Opportunity should be given for as many as possible to have a part in the enterprise. For men to contribute outright a few Liberty Bonds to a local community cause will help to dispel the delusion that a man is doing anything especially generous when he puts his money into an investment which offers the best security in the world and a fair rate of interest. To couple the Fifth Loan with free gifts and soldiers' memorials will make it in a real sense a Victory Loan. It will be much more than this: it will be a Reconstruction Loan.

The plan here suggested for making use-

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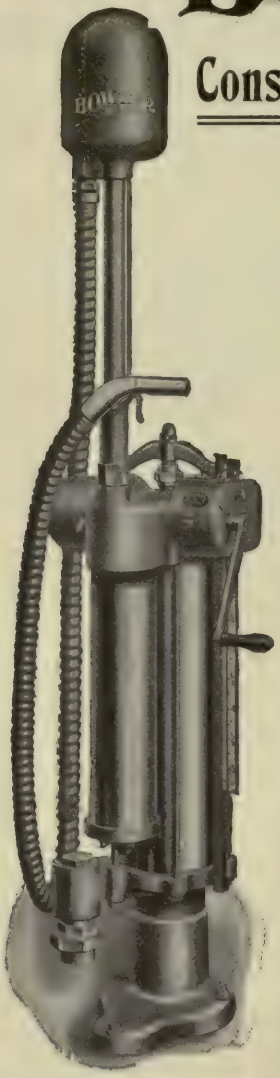


Figure 101. 5-Gallon Quick Return Pump—For use with Fireproof Underground Tank.

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of it was due to carelessness.

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ful memorials and paying for them with Liberty Bonds will naturally take a variety of forms to meet the needs of local communities, but the principle is the same. It commends itself to the judgment and common sense of the people, as soon as they understand it. It has been tested in many communities, in each of which it received immediate approval, altho in each place it was applied in a different way.

A Remodeled Building

At one time the writer was asked to visit a dozen towns and cities of Iowa for the promotion of community organization. Among them was the little town of Clarinda. After the lecture in the Court House and a spirited open discussion, a few leaders of social activities met in the hotel to advise ways of putting into operation the suggestion of the lecture. In the center of the town is a fine armory building worth $40,000 and very little used. It is owned by the town. Iowa has a law which permits its towns to acquire such buildings and maintain them for community activities. It was suggested that this building be made a memorial to the soldiers and that it be remodeled and used as headquarters for the Greater Clarinda Club, the Y. M. C. A., the Y. W. C. A., the Red Cross, and any other enterprise which is non-sectarian and non-partisan, and whose aim is the common welfare. It was also suggested that part of the fine semi-basement be equipped with a fireplace and fitted up as a club and reading-room for returning soldiers.

The plan to make this building a center of community activities and to raise the fund for remodeling it thru Liberty Bonds of the fifth issue rather than wait for the town to ask for a bond issue was enthusiastically adopted. The soldier boys of this section belong to the Rainbow Division of the Army. Utilizing their return home to stimulate a movement like this will put over the town a rainbow of hope for a better community spirit.

An Endowed Memorial

The response made by Sac City illustrates not only characteristic American speed and enthusiasm, but an element in the plan which needs emphasis. At the close of the writer's address to the Commercial Club at its annual banquet, he suggested that the Club buy a certain large private house which he learned was for sale. One of the two heirs of this building had promised to give his share if it were used for public purposes, and the suggestion was made that it be fitted up as the city's memorial community building.

The Mayor arose and said that the idea so fully met a long-felt need that he desired to subscribe for five $100 Liberty Bonds of the fifth issue and present them to the Club for this purpose, and that he would make it ten if needed. Three other citizens arose and said in turn, "I'll match the Mayor." Here was $2,000, and $4,000 if needed, subscribed on the spot spontaneously. It was an unexpected thrill to the audience and the speaker. How greatly the latter's joy was increased may be imagined when two days later he received a long distance message from Sac City asking him to revisit it on his return to Washington. When he asked what had happened, he was told that the proposed plan had so enthused Sac City that it had decided to raise $200,000. The writer replied, "Please say it again. It sounds too good to be true." But it was true—$100,000 for a new building, and $100,000 as an endowment for operating expenses. They wanted the writer to spend a day with them to determine the kind of building, the nature of the activities to be housed, how to provide for their operation and support, and how to relate the enterprise to the town government. Ten days later an architect was on his way to the town to draw plans for the building.

It is to be noted that the $100,000 endowment will remain in Liberty Bonds during the life of the bonds. So far as possible, all bonds contributed for community buildings ought not to be converted into money, but used as money. Current money will, of course, be needed by builders, but an effort should be made to induce trust companies and estates to take over the bonds because of the public purposes for which they are used. It is highly important to guard against the danger of depressing the price of bonds by throwing them on the market. Builders who are paid for the work ought to agree to retain them, if possible, for a certain period—one or two years after their issue.

Building on a River

The last and largest response to the community building suggestion during the

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vriter's Iowa trip was made by Waterloo. The city's situation illustrates a distinct element in the memorial building plan which needs to be noted.

The city is divided in half by a little river. Between the two sections there is an ancient rivalry and antagonism; in consequence, there is a distressing duplication of institutions and activities. There are two school systems, two high schools, two superintendents, two commercial clubs, entailing needless overhead charges. The writer discovered that a few years ago a gentleman who was born and raised in the town and who has since attained fame and fortune offered to give the town the sum of $250,000 for some kind of public building. The writer urged the citizens to revive and accept the offer, to make the building a community memorial and to build it across the river, thus making it a highway and not a barrier.

The plan was warmly approved, with the added suggestion that the town raise a like sum thru Liberty Bonds and build a $500,000 building. At the close of the meeting steps were taken to put the plan into operation. While this amount seems large, the saving effected thru the elimination of needless overhead charges due to present duplication of activities would go far to pay for such a building. The same is true to a large extent in every town, and is a convincing argument in favor of community buildings everywhere.

The needs and conditions of local communities differ widely, and Americans have sufficient initiative to use the means required to meet them. While the various forms of memorials here described are distinctly different, the root idea is the same in all. As a rule the public schoolhouse is the most logical and suitable building to be made into a community memorial, yet there are exceptions to all rules. There are situations where other buildings already existing ought to be utilized, or where the people want to build a separate building to be used both as a town hall and a community center.

Those communities which need a new school building and are wise enough to make it a community building in commemoration of the triumph of democracy have a rare opportunity.

The Essential Needs

What are the internal needs and community uses which the new type of school buildings is required to meet? The essential needs may fairly be regarded as seven. They seem to require a large expenditure, but from the standpoint of community finances the facilities here suggested obviously mean a wise economy, because they will prevent a needless duplication of buildings. The buildings are used not only for school activities, but also for every variety of activity by youths and adults. These essential facilities are as follows:

1. An assembly-room; to be used also for social games, folk dances, dinner parties, and gymnasium purposes.

2. Classrooms; to be so arranged that they may be used also for departmental activities of the community center.

3. A workshop; to be used also for vocational night classes and for mechanical experimental work as recreation.

4. Library and reading-room; to be used also as a neighborhood club, conference room, and a clearing-house for information.

5. Kitchen and storeroom; to be used also for household economics, community dinners, and coöperative exchanges.

6. An open fireplace; to be used for its spiritual value in creating good cheer and the neighborly sense of fellowship.

7. Voting instruments; to be erected permanently and used not only in the curriculum of the school and in public elections, but also as a symbol of the aim for which both the school and the community center stand.

The Common House

If we are to put into effective operation at home those ideals for which we have fought abroad, community buildings are indispensable. As one comes to see their beauty and significance, he will agree with President Poincaré when he said:

"Come with me now to the common house, the Maison Commune, and tell me, first, if you know of a more beautiful name than this —the common house! There is, in the village, a house that belongs to no one in particular, that is open to the poor as to the rich; that is, so to speak, the domestic center, the home of the village itself."

EDITORIAL NOTE.—The foregoing article has been prepared from Community Center Circular No. 3, entitled "Community Buildings as Soldiers' Memorials," issued by the U. S. Bureau of Education.



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Repairing Concrete Roads

Bituminous Binder Advocated for Cracks and Small Holes

By John S. Crandell

THE prompt repair of cracks, holes, chipped and spalled corners, and abraded surfaces of concrete roads is advocated by all highway engineers. Most engineers have advocated the maintenance of concrete roads with bituminous materials, for they early saw that without such careful repair, weather and traffic would cause these rigid pavements to fail. The same methods are being adopted now in the case of brick and other pavements of the same class, with astonishingly good results. In addition to the patching of holes and the mending of cracks, there is other maintenance and repair work to be done, such as keeping weeds down, cleaning culverts, taking care of badly heaved slabs, and giving attention to fences and road signs. The regular patrolman should look after these last, but the patching and mending should be given over to regular repair gangs, the members of which can be trained to do perfect work.



PAINTING THE CLEANED-OUT DEPRESSION WITH HOT REFINED TAR

The Repair Equipment and Its Use

The typical repair gang should be supplied with a light motor truck or a horse and wagon, a small tar kettle, a sprinkling pot or pail, brooms, swab, cold chisel, hammer, steel hook, wheelbarrow, shovels, gravel or stone chips, sand and a satisfactory bituminous filler or Tarvia XC. The roads should be carefully examined to see that all cracks and pit holes are filled with refined tar. The steel hook is handy to dislodge caked dirt or foreign substance in the cracks. Before applying the refined tar the cracks and holes must be clean and dry. The brooms must be wielded vigorously, so that the surfaces to be tarred are dustless. A thin film of dust will prevent refined tar from adhering to concrete. Tar does not stick to a wet surface, altho a damp surface is not objectionable.



PLACING THE HOT MIX OF TAR, STONE CHIPS AND SAND IN THE HOLE AFTER PAINTING WITH TAR

Dish-shaped holes are difficult to patch well, because the bituminous cement patch will crowd out. If the hole is of any considerable area, it is best to chisel the edges vertical for a depth of about an inch. The bottom and sides of the depression are painted with hot refined tar. A mix of hot tar, stone chips

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> ***"It is made or can be changed or adjusted to deliver a flat stream of water under pressure, forward and laterally, at an angle of 20 degrees or less."***

The validity of the patent has been sustained by numerous Federal Court decisions and municipalities and others are warned against the purchase or use of unlicensed Street Flushing Machines.

Studebaker Municipal Utilities Company
South Bend, Indiana

3115

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and sand is made and tamped into the hole. A seal coat of hot tar is applied, and the surface covered with coarse sand or chips. Such a patch will not crowd out of the hole, for the vertical sides prevent motion.

Large holes should be cut thru to the subgrade and a patch should be made of cement concrete. Eventually cracks will form between the patch and the old concrete; these must be mended with bituminous material.



PLACING THE SEAL COAT OF HOT TAR ON THE TAMPED HOT MIX

It is very important that the refined tar used should not be heated to a temperature higher than 275 degrees F., but it should be heated to 220 degrees F. The foreman of the gang should have an inspector's thermometer, and he should be made to use it. Some foremen say that they can tell by the color of the smoke how hot the tar is, but since they have never compared the color of the smoke with a thermometer's reading they know nothing about it. The writer has many times found a temperature of 350 degrees in the kettle when the foreman thought it not over 200 degrees. Refined tar kept at such a high temperature in an open kettle becomes brittle, and patches made with burned tar kick out under traffic. Tarvia XC runs as easily at 225 degrees as at higher temperatures, so there is no need to heat it above that figure.

A little more tar than is needed should be used, so as to flow over and protect the edges of cracks from traffic. Wide cracks should be filled with tar, chips or gravel, and sand. A tar cement of this kind will stay in place in all weathers, but if a wide crack is filled with refined tar alone the filler will run in hot weather.

When pebbles, stones, or the like are dislodged from the surface of a concrete road, the hole formed should be filled as soon as possible with refined tar. Such holes rapidly increase in size if not immediately patched. The repair gang should go its rounds twice a year. Minor repairs can be taken care of by the local patrolman until the repair gang arrives and undertakes its regular work.



SEALING A LARGE HOLE WITH HOT TAR DIRECT FROM THE TANK WAGON

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Why maintain the old, filthy and costly and unsanitary method of cleaning catch basins by hand when the Otterson Auto Eductor, as shown below, will help to keep your city healthy by maintaining your catch basins in a clean, efficient and sanitary condition, and at the same time save money for your city over the hand method?

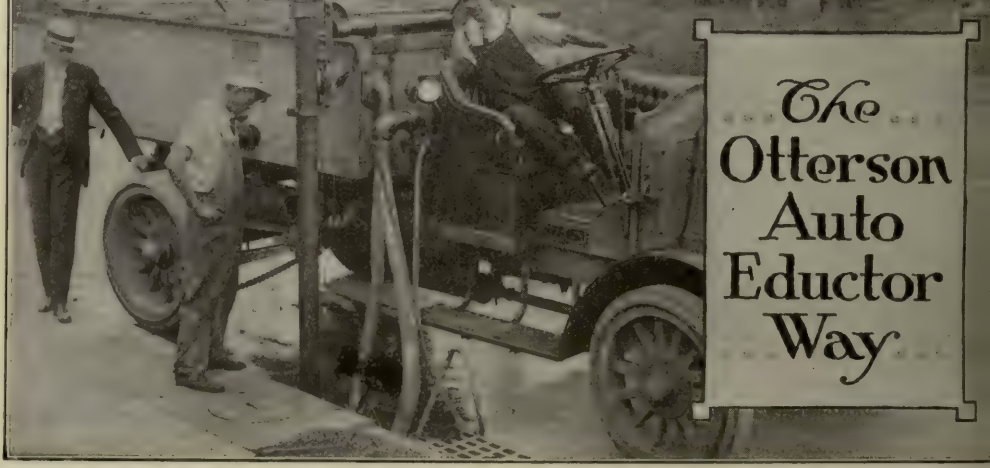
The following letter from D. R. Lyman, Chief Engineer of the City of Louisville, Ky., will interest you in this connection:

"During the first twelve months that this machine was operated, the actual operating expense, including labor, fuel, and repairs, has averaged 62c. per basin. The machine has cleaned 5,500 basins, which represent a total operating expense of $3,410.00. Previous to the purchase of this machine, hand cleaning averaged $3.40 per basin, which wouod represent an expense of $18,700.00 on the 5,500 basins cleaned during the past year. The Auto-Eductor has consequently effected us a saving of $15,290.00 in twelve months' time. These figures did not in either case include any allowance for depreciation. If 20% be allowed for annual depreciation, the average cost per basin would be increased to 86c., and the total annual saving decreased to $13,970.00, but it is worthy of note that even under this method of accounting the machine has more than paid for itself in one year's time."

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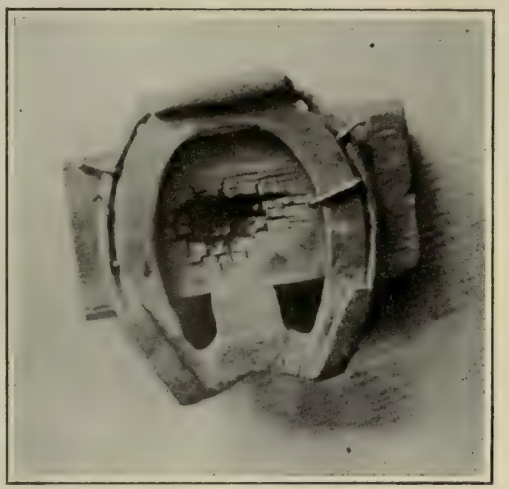
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How Fitchburg Is Teaching Fire Prevention

THE necessity of teaching fire prevention to the citizens of every city is recognized forcibly by fire chiefs all over the country, and many have taken various methods of imparting this knowledge, with varying degrees of success. Fire Chief Henry J. Hyatt, of Fitchburg, Mass., became imbued with the necessity of doing something along this line, especially since the fire loss in Fitchburg in 1917 was triple that of 1916. The result of his planning is an illustrated lecture entitled "Fire Fighting and Fire Prevention."

This lecture is the product of two members of the fire department, Lieut. Ernest A. Slattery and Ladderman Ernest A. Stolba. It is being shown in every school of the city and before public gatherings, and so far has created a distinct interest in fire prevention. The lecture, delivered by Lieutenant Slattery, a forcible speaker, contains slides of fires of serious proportions in Fitchburg and other cities, views of apparatus, old and new, of hazardous conditions and of the result of carelessness in the home and factory. The danger of fires resulting from spontaneous combustion, the accumulation of rubbish and careless use of electric appliances, matches, etc., is emphasized strongly. It is brought home to the audiences that the nation's fire bill of one year, if applied to construction, would have furnished the navy with 150 destroyers or built 30,000 aeroplanes or, still better, have cared for so many homeless children of France. The photographs from which the fifty slides were made were taken mostly by Messrs. Slattery and Stolba, and much of the finishing and slide making was done in a dark-room at fire headquarters. Chief Hyatt and the lecturers find that with the lecture and accompanying slides they can hold the attention of an audience easily for forty-five minutes, during which time it is possible to bring out many telling points. The first presentation of the lecture was early in December, and during that month the department was called on to answer only two bell alarms, the lowest number in many months.

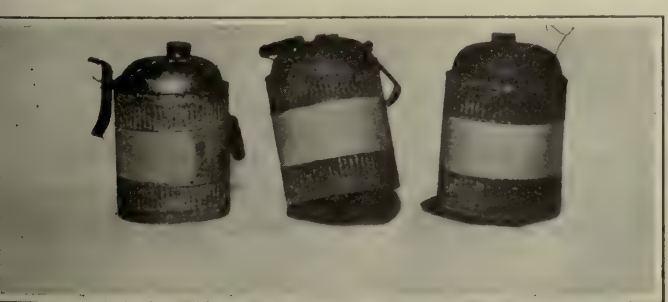


A TAILOR USED THIS AS A STAND FOR AN ELECTRIC IRON

A Fitchburg fireman found the badly charred board, on an inspection tour

It is the intention to inaugurate a contest in the schools, after the lecture has been presented at all of them. Each child will be asked to submit an essay on fire prevention, based on the fire department lecture, for a suitable prize or prizes. This, it is reasoned, will stimulate the interest greatly, and still further aid the campaign against preventable fire.

The campaign is also carried on by means of regular, systematic inspection by the permanent firemen of all stations. The men inspect their own sections of the city one week, and then are shifted, so as to be-



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Two deaths resulted. It is alleged that some of the oil contained gasoline

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Economical operation is a Federal advantage that should be considered carefully in these times. This means not only oils and fuel, but repairs and all expense.

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ome familiar with the entire city. They re taught where to find sprinkler system ut-offs, fire escapes and exits, and are ade acquainted with especially hazardous onditions.

The city department is three-fourths motorized and fifty per cent permanently manned, equipped with modern apparatus and tools; but Chief Hyatt, altho fully prepared for fire, is a firm believer in "fighting fires before they are lit"—an excellent policy for all fire departments.

A Proposed Federal Agency to Deal with Housing, Town Planning and Other Municipal Affairs

An informal conference to discuss the reation of a federal agency to deal in whole in part with industrial housing, town lanning, community planning, municipal fairs, etc., was called to meet at the City lub, Philadelphia, January 3, 1919, by awson Purdy, J. Horace McFarland, rederick Law Olmsted, Robert W. de orest and Samuel Gompers.

It was the sense of the majority of those resent that:—

A. Some kind of a federal agency to deal ith housing, town planning or community anning should be established.

B. Such a federal agency should deal with ousing and community planning, in the broad nse of dealing with the entire physical en- ronment of the inhabitants.

C. The proposed federal agency should be nited to the function of research, experi- entation and dissemination of information, ting as a central agency for the service of ate authorities and local committees.

D. It is more expedient that the proposed ew agency, without consolidation, should act a means of making more available, from e point of view of the community as a so- al unit, such technical resources as can be pplied by existing independent federal agen- es (in which other points of view may be ominant) and should undertake within its wn organization direct technical investigation ly in such parts of its field as are beyond e scope of existing governmental agencies.

It was also the sense of the majority of those present that federal action should be taken toward creating a comprehensive and systematic mechanism to facilitate the financing of housing.

A committee appointed by the Conference appeared before the House Committee on Buildings and Grounds on January 8 and protested against the Senate resolution that would have stopped work on all housing projects of the United States Housing Corporation not 75 per cent completed. This protest was effective. The House Committee has presented a substitute resolution under the same name, which orders the completion of twenty-four of the projects thruout the country, and the Washington projects; the resolution further proposes that the Secretary of Labor make to Congress "such recommendations and suggestions as he may deem practicable to meet the demands for homes for the citizens of the United States."

According to the instructions of the Conference, a Joint Committee is being appointed, made up of Committees of One from each of a number of national organizations, to draft the bill authorizing and directing the formation of the federal agency advocated.

ANDREW WRIGHT CRAWFORD,
Secretary of the Conference.

On the Calendar of Conventions

EBRUARY 20-22.—ST. LOUIS, MO.
National Society for Vocational Education. Annual convention. Assistant Secretary, May Allison, 140 West Forty-second Street, New York City.

EBRUARY 24-MARCH 1.—CHICAGO, ILL.
National Education Association—Department of Superintendence. Subject: National Emergency in Education. Secretary, J. W. Crabtree, 1,400 Massachusetts Avenue, N. W., Washington, D. C.

EBRUARY 25-28.—NEW YORK CITY.
American Road Builders' Association. Annual convention. Secretary, E. L. Powers, 150 Nassau Street, New York City.

APRIL 14-19.—MINERAL WELLS, TEX.
United States Good Roads Association. Annual convention. Secretary, J. A. Rountree, Birmingham, Ala.

APRIL 25-26.—PHILADELPHIA, PA.
American Academy of Political and Social Science. Annual meeting. Secretary, J. P. Lichtenberger, Logan Hall, West Philadelphia, Pa.

APRIL 29-MAY 1.—ST. LOUIS, MO.
Chamber of Commerce of the United States of America. Annual meeting. General Secretary, Elliot H. Goodwin, Riggs Building, Washington, D. C.

JANESVILLE
WISCONSIN

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shows Flusher
in Action



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CLYDESDALE MOTOR TRUCKS *built in* CLYDE, OH

By Truck Builders Among the Oldest in America

Higher Water Rates Necessary to Offset Increasing Costs

By John J. Moore
Consulting Engineer, Boston, Mass.

JOHN SKELTON WILLIAMS, Controller of the Currency, in his 1917 report to Congress, goes into detail about the decline in earning capacity of public utility corporations. He speaks of the danger as a national one, in the loss in efficiency of such utilities due to lack of funds to operate plants efficiently on account of the increased cost of material and wages. Mr. Williams urges upon public utility companies and on state commissioners the necessity of some action to lessen the danger to industries, many of which are dependent in one way or another upon the service rendered by public utilities.

In a general way the cost of materials used in operating water plants has advanced all the way from 150 to 250 per cent. Fuel and wages have advanced 100 per cent. The figures quoted are taken from the records of companies all of which have either increased, or asked for an increase in, the water rates.

An item which can hardly be considered under either materials or wages, and yet which has added greatly to the operating expense of many companies, is that of taxes. One Massachusetts company eight or nine years ago was paying to the town in taxes 50 per cent less than it was receiving from the town in hydrant rental. Last year the company paid the town $1,300 more in taxes than it received in hydrant rental,—a difference of 30 per cent. In another Massachusetts company the taxes have advanced 43 per cent in the last five years. Operating costs in both of these companies have advanced during the last year in percentages varying from 50 to 80.

Where oil is used as fuel, the increase is between 50 and 60 per cent; where coal is used, the increase is about 80 per cent. Wages at pumping stations have advanced from 30 to 45 per cent. Wages of engineers have advanced 50 per cent. The wages of day laborers have advanced 60 per cent over 1917, which showed at least 30 or 40 per cent advance over previous years, thus materially increasing costs.

Water-works plants, which two or three years or even one year ago were earning an average of 8.8 per cent on the capital stock, are to-day earning 6.3 per cent. Plants which were earning a year ago an average of 4½ per cent on the capital stock are to-day earning a little less than 2 per cent on the capital stock.

Probably the greatest problem is how and where to get the increased rates. There is a question as to what proportion of rates the towns should bear as compared to that paid by domestic users. The old idea was that the town should get all it possibly could for the lowest rental. In the West it has been held by public utility commissions that the cost of building and maintaining a system of water-works giving fire protection to a town or city is about 66⅔ per cent more than the cost of a system supplying water for domestic users only, and therefore the proportion of the burden of supporting a public utility in such a way as to render efficient service to the town or city should be greater for the town or city than for the domestic users.

In a recent decision in Pennsylvania the commission decided that a water company should be entitled to earn in addition to the expense of operation and annual depreciation a 7 per cent return on the value of its plant. In another decision the same commission decided that a water company in a town where certain improvements were ordered should receive an 8 per cent return on the valuation fixed by the commission. This valuation, by the way, was fixed by the commission as only $15,000 less than the book value of the company.

The California Commissioner also considers a net return of 8 per cent on the valuation as a fair return. The Maine Utilities Commissioners have in a decision rendered in 1917 stated that they consider 6 per cent net income on the fair valuation of the properties of a water company a fair return on the investment.

—"an economical method of street cleaning"

E. J. Diffenbacher, Mayor Beamont, Te

E. J. DIFFENBACHER, MAYOR JOHN F. KIRWIN, CITY SECRETARY

Office of Mayor
BEAUMONT, TEXAS

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May 21, 1918.

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Lima, Ohio.

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Very truly yours,

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Should Meters Be Owned and Controlled by the Municipality?

By Thomas H. Hooper
Superintendent, Water-Works, Winnipeg, Canada

THE question of ownership of water meters is one that has been settled in many different ways by different municipalities. Some places insist that water users shall provide their own meters; in other cases the meters are loaned, the users being responsible for all repairs, while to my mind the only proper and safe course is for the municipality to both own and keep in repair all water meters used in the system. It will be readily understood that there is great advantage in having absolute control of this, the most important part of the water-works system, so that meters may be selected which can be relied on to measure accurately all the water that is sold.

Where the water users provide their own meters, it results in a large variety of styles, and sometimes repair parts are very hard to procure. On the other hand, where the meters are under the control of the municipality, it is generally found that a certain type of meter is used for which an adequate stock of repair parts is always kept on hand.

No municipal council or body of business men can offer any evidence against the use of water meters. The principal objection is the expenditure required in the initial cost, but to those men who can see far enough ahead the saving is so great that in a very few years the meters have not only paid for themselves but are a distinct asset to the municipality.

Some places resort to the system of metering large services and trying to control the small ones by inspection. I have no complaint to make as regards inspection, but, from my own knowledge, inspection cannot be compared with the work of a correct water meter. Some leaks are so small and silent as not to be noticeable, a condition which causes a considerable amount of water waste.

I do not think the question of meters or no meters should ever be left to the decision of the people who are expected to use them. The matter should be treated as an order of the Municipal Council and the meters should be installed without any of the discussion generally brought about thru users who are under the belief that, as water costs nothing, they can waste all they like, not realizing that while the water may be free the cost of distribution is fairly heavy.

Whenever the consumer receives a bill showing a large excess, he first blames the water meter, maintaining that it is not registering correctly. In Winnipeg an inspection of the plumbing fixtures immediately follows, and if there are no leaks which would account for the excess, a check meter is installed and the owner is requested to compare the readings of the two meters daily. It generally happens at the expiration of ten days or two weeks that the permanent or house meter is found to be correct, and the complainant settles his bill without further question.

The installing of these check meters costs a certain sum of money; but I believe it pays in the long run to do this, as all the arguments on earth will not convince some of these irate water users but that the meter installed in their premises is incorrect until such time as a check meter shows otherwise.



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This is due to the fact that into every part of the Indiana chassis is built 112% reserve strength that keeps the truck in service year after year. No one knows how long your Indiana Truck's chassis will last in flusher service, for no Indiana has ever worn out.

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Long life, hence, less-per-year, per-month, per-day flushing cost; 112% reserve strength and low first cost should make the Indiana your selection. Write for our "Hauling Costs Book," which gives your actual figures for your miles, your loads and your capacities.

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Must We Await Constitutional Amendments Before Cities Can Engage in Housing?

By Frank B. Williams

Chairman, City Planning Committee, City Club of New York

NEVER before in the history of the United States has the demand for municipal housing been so strong as it is to-day. Up to the time of our entrance into the war, legislation in this country to improve housing had been altogether negative in its aim. Partly because public sentiment would not have warranted anything else, partly because we did not believe that any other policy would be constitutional, our governments until then had without exception limited themselves to attempts to prevent the erection of bad houses; while all the other progressive countries of the Americas and of Europe endeavored to increase the supply of good houses of the type most needed and made use of public funds for the purpose.

Everywhere—in this country as well as in others—there has been a scarcity of proper homes for the wage-earner of limited means; and in no small measure this scarcity was the cause of excessive labor turnover, industrial unrest and disorder, and impaired health and efficiency, all of which were burdens upon society as a whole. The war forced upon us, for the first time, the recognition of this fact, and as a war measure essential to victory the United States Government built houses with public money for some of its employes.

The almost entire cessation of building during the war has made the need greater than ever before. The United States Government, by its example, has shown us a remedy. Must we await the amendment of our state constitutions before applying it?

In the United States, as in other enlightened countries, public money may be used for public purposes, and nothing else. Evidently there is no logical reason why, under this principle, other countries can use public funds for housing and we cannot. Constitutions, however, are not interpreted and applied altogether by logic, but, also, in no small degree, in the light of history, custom and public opinion. Thus Mr. Justice Holmes, one of the ablest Judges of our Supreme Court of the United States, in a widely quoted passage, says of the police power, that it "extends to all the public needs. . . . . It may be put forth in aid of what is sanctioned by usage, or held by the prevailing mortality or strong and preponderant opinion to be greatly and immediately necessary to the public welfare."* Thus, too, the Court of Appeals of the State of New York gives, as a reason for reversing its former decision as to the constitutionality of laws restricting night work by women:

> "Especially and necessarily was there lacking [when rendering the former decision] evidence of the extent to which during the intervening years the opinion and belief have spread and strengthened that such night work is injurious to women."†

Certainly there is no reason in logic or common sense why the public authorities in this country should be permitted to furnish, as public utilities, the transportation to a man's house, together with the water, light and heat in it, and not the house itself. If this distinction was based upon custom and public opinion in this country, is it not clear that our tremendous experiences in this epoch-making war have removed these obstacles, and that our judges should recognize this fact, and at once support laws empowering cities to use public money for housing, under our state constitutions as they exist to-day?

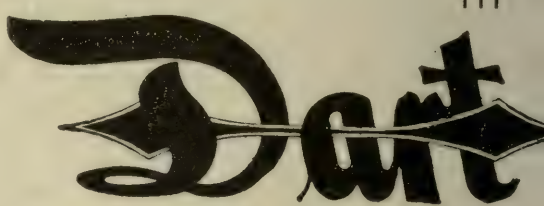
And if housing is necessary, rehousing, especially at this time, is no less so. We cannot allow the men from the overcrowded sections of our cities, who have proved themselves in this war entitled to better things, to return to the living conditions they left; we cannot permit another influenza epidemic, costing us more lives than the great war itself, and due, in no small measure, to a lack of sun and air in our

* Noble State Bank vs. Haskell, 219 U. S., 104 at 111.

† People vs. Schweinler Press, 214 N. Y., 395.

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homes, to sweep over the country. For the sake of the entire community, we must get rid of our slums.

Under the laws of several of the more progressive European countries, by what is called "zone condemnation," slum areas are taken as a whole, replanned, rebuilt and resold. In no other manner can this work be done so thoroly or so cheaply.

In the United States we have never attempted this task in this way. In some cases we have removed a slum, and made a park in its place; but we do not always want a park at that particular spot, and cannot always afford to pay for it. If housing is constitutional, zone condemnation and rehousing are constitutional also. There are many statutes in this country for the condemnation of low-lying, unhealthful tracts of land, for the purpose of draining, replanning and reselling them; and these statutes have been sustained by our highest courts. It was in this way that the Back Bay in Boston was replanned; and the law authorizing the project was held valid by the Supreme Court of Massachusetts and the Supreme Court of the United States.* A slum is certainly a much greater public evil—and its renovation a much greater benefit—than a low-lying tract of land; and in both cases zone condemnation, replanning and resale is a proper and businesslike method of doing the work. When once the courts recognize housing as a public use, zone condemnation as a method of slum removal will also, without question, be recognized by them as constitutional.

* Dingley vs. Boston, 100 Mass., 544; Sweet vs. Rechel, 159 U. S., 380.

Playgrounds and Recreation Centers as Memorials

By O. W. Douglas

IT is related of Alexander the Great that, when seated at the banquet table, surrounded by his favorite generals, he asked the question, "Are all here, Clitus, who fought at Issus?" Clitus answered him, saying: "Yes, Alexander, all are here who fought at Issus, save those who fell." Then said Alexander, "All, all are here who fought at Issus, for the fallen brave live forever in our hearts and memories."

Because the brave dead do live in the hearts and memories of their friends and countrymen, the custom has persisted among civilized peoples from earliest times of erecting some kind of monument or memorial to the honored dead, or a triumphal arch to the victorious living.

Hundreds of communities thruout the country will no doubt organize in an effort to show their appreciation of the heroes of the World War, by establishing some kind of memorial. Many parents who have lost an only son may feel impelled to leave some mark or memento to the honor of their loved one. In many cases colleges or other institutions will take similar action.

The question naturally arises as to the most appropriate memorial to establish. There is no good reason why a memorial may not be established that will serve as a real community asset and be indeed a living memorial. Nothing could be more useful and appropriate than a Memorial Playground for the benefit of returned soldiers and sailors, as well as civilian adults and children.

The plan could have a wide range of development, depending upon local conditions. To the writer's mind an ideal arrangement would be the establishment of a complete recreation plant for the use of people of all ages, and including a children's playground, an athletic field, a swimming pool, and a Community House, or Liberty Building, as they are becoming known. The entire ground might be enclosed by an attractive fence or hedge and beautified by the landscape architect with flowers, shrubs and trees. The plan would not be complete without an appropriate gateway with tablet.

Small communities can readily adapt their plans to meet local conditions. In all cases, provision should be made for permanent maintenance and supervision of grounds and buildings. In many cases, no doubt, the coöperation of local park authorities might be secured in obtaining the greatest benefits from these Memorial Playgrounds.





Keep the Streets Clean

Paved streets not in themselves make the ideal roadway of a municipality.

Unless they are kept clean the dust that is driven off of them by the wind is a disease breeder—an unsanitary condition—to say nothing of being an eyesore.

Street cleaning is a necessary part of every city's work and with the aid of a motor truck it is made most simple.

As we have said many times before the preference shown by many city governments for GMC trucks has been marked. It is due two things.

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GMC is equally well fitted for police, fire, a bulance, sewer, road-building and other mu cipal needs.

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Tree Planting an Important Part of City Reconstruction Programs

By P. S. Ridsdale
Secretary, American Forestry Association

NEW plans for city improvement are being discussed in cities and towns all over the United States; and in hundreds of cases these are the outgrowth of the desire to provide memorials in honor of the heroes who gave their lives in the great war. Arches, parks and boulevards, community buildings and various other forms have been suggested for this purpose. Frequently the plans are of an elaborate nature. The carrying out of these projects will lead to the extension of road-building, to the beautification of parks, to the laying out of artificial lakes and walks, to the widening of avenues and streets, to the practical rebuilding of whole sections in some cities and to other general improvements.

In all these plans the planting and the proper setting of trees should be kept in mind. There is both a practical and a sentimental reason why tree planting is a most appropriate form of memorial to the nation's heroes.

Cities are proud of their fine trees just as they are proud of their distinguished and worthy citizens. Trees are landmarks which add to the dignity, the beauty, the general appearance of any community. It matters not what the size of the place; it can be improved by the proper planting of trees along the streets and the roads leading into the town, in open spaces and parks and in clusters at points where they will increase the beauty of the surroundings.

Joyce Kilmer, the American poet who gave his life on a French battlefield, sang in his beautiful poem:

"I think that I shall never see
A poem lovely as a tree."

Nothing in Nature is more beautiful, nothing more useful to man, than the tree. It is there for his admiration and his protection, and at the same time it furnishes him with material for home-building and for hundreds of the daily articles he needs.

One of the striking reasons why the planting of trees is such a fit method of placing a mark of patriotic approval and affection on the work done by America's war heroes is because of the important part played by wood in the war. It served in a hundred, yes, a thousand ways to help hold back the Hun. From the aeroplanes which sought the sun to the piles for big docks at French ports, from the timbers needed in trench construction to the polished gun stocks, from railroad ties to boards for boxes and billets—in these and numerous other ways wood was called upon to assist in the winning of the war. Therefore, any movement looking to replacement, to help make up part of the great sacrifices sustained in this direction, should be encouraged.

Inspiring and handsome tho other forms of memorial may be, there is nothing that can be more appropriate, more beautiful, and that will breathe more deeply the spirit of heroic Americanism, than the living, growing tree. It stands as a constant reminder of the undying principles which our brave men defended. As it grows thru the passing years, it will become more and more hallowed, like the memory of the men whose sacrifices it commemorates.

The number of parks and avenues of fine trees which many of our cities and towns contain testify to the American people's love of these green growing monuments. How often do you hear someone stop to exclaim, "I wonder who planted that fine tree. Isn't it a beauty?" and to extol the memory of the benefactor to mankind who had started it on its way. There should be an increase in the number of such parks and avenues. While plans for city betterment are in the air, with discussion of Liberty Boulevards and Pershing Avenues and municipal civic centers, war museums, plazas and arches of triumph, there should be kept in mind some suitable scheme of tree planting. Groves or parks of trees would constitute a memorial as inspiring and as lasting as any that could be erected by the hand of man; but, whether by them-



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These outfits are being used with very satisfactory results by a number of cities and your municipality will find the idea well worth investigating if you are desirous of increasing the efficiency of your street cleaning service.

Let us have your name and address so that we can send you further facts and figures as to how this system of sprinkling and flushing will reduce your costs and improve your city's reputation for well kept pavements.

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Worcester **Mass.**



selves or in conjunction with other forms of memorial, trees should be included in any city's scheme of commemoration for its war heroes.

There are many ways of using trees effectively in improving the general appearance of any city or section thereof. Each place must decide for itself just what form its tree planting will take. As to kinds of trees to plant in any particular locality and as to whether they will thrive well there, it is easy to secure advice; and the American Forestry Association will be glad to answer any questions along this line which any committee or city official may care to make. It matters not what tree be planted, whether it be oak or elm, walnut or maple, palm or pine, the thought back of it will be the same; and the work accomplished will serve the double duty of being a memorial to the dead and an ever-present blessing to the living.

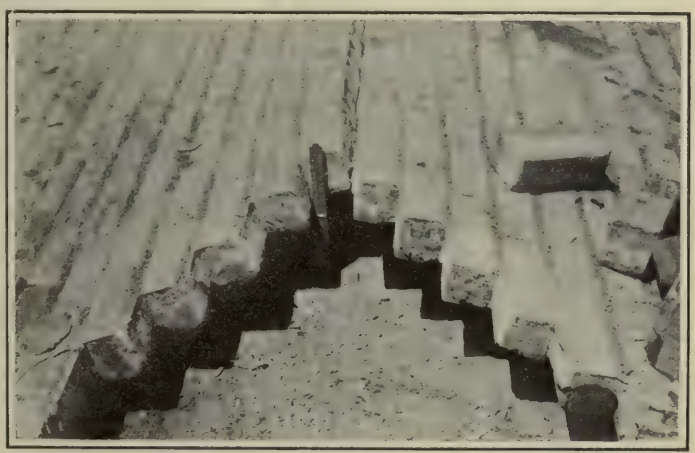
Expansion Joints Were Needed

By C. W. Geiger

THE accompanying photographs show an instance in which expansion in a brick pavement has raised up the entire strip, forming an arch, without cracks appearing in any of the pavement except down thru the center. The strip of brick is 14 feet wide, and on each side is a strip of asphalt. On all streets having a grade above 6 per cent, either a center or a side strip of brick is combined with the asphalt. The brick strip gives a foothold for horses, and the asphalt makes a good road for automobiles.

This buckling of the brick pavement was due to the failure to use proper expansion joints, so as to make allowance for the expansion of the bricks. The row of brick on each side of the crack was raised about 8 inches above the foundation.

The failure was due entirely to miscalculation on the part of the contractor.



A "CLOSE-UP" OF THE BULGING PAVEMENT



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The City's Legal Responsibilities and Powers

A Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

For special assistance in ascertaining the law, statutory or judicial, on any legal question relating to municipalities, address Legal Department, THE AMERICAN CITY, *Tribune Building, New York City.*

Limits on Powers to Demolish Buildings

Affirming judgment in favor of plaintiff against defendant municipality for damages resulting from the demolition of plaintiff's private barn pursuant to an ordinance providing for abatement of nuisances arising from the maintenance of unsafe or insanitary buildings, the Indiana Appellate Court lately said in the case of West vs. Town of Bloomfield, 121 Northeastern Reporter, 4:

"We think it a matter of judicial knowledge that a frame barn, or similar structure, lawfully and properly erected and maintained on property in a reasonably safe condition, cannot, in and of itself, be a public nuisance. * * * The use or the condition of that structure, however, may become objectionable, and steps may then be taken to abate or remove the nuisance thus created, provided that such power is not exercised to a degree greater than is necessary to preserve the public interest. If the nuisance arises out of the improper use of a building, and is not inherent in the structure, the municipal corporation may regulate the matter of use; but it has no right, in the exercise of its police or other power, to order a destruction of the building; and, if the offense is inherent in the structure, a demolition thereof may not be resorted to if, prior to the exercise of municipal authority, the objectionable features have been eliminated by the property owner."

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Safety of Sidewalks for Travel

A city's obligation to keep its public sidewalks in a reasonably safe condition for travel, and liability for injuries directly resulting from its failure to do so, does not create liability where hose is laid across a sidewalk temporarily for reasonable use in constructing a public improvement, except as it may be so laid as to unnecessarily create a peril for those using the way. (Iowa Supreme Court, Cutshall vs. City of Keokuk, 169 Northwestern Reporter, 677.)

Missouri Sidewalk Assessments

Sustaining the validity of a tax bill issued for the construction of a sidewalk in a Missouri city of the fourth class, the Kansas City Court of Appeals lays down the following rules: Two lots owned by one person may be treated as a single tract for the purpose of a local improvement assessment, the two lots being used as a single piece of ground. Any question as to the validity of a statute requiring each lot to bear the expense of an improvement constructed in front of it will not be determined at the instance of one not shown to have suffered any injustice under the operation of the law. Nor can a property-owner complain of an ordinance directing removal of replaced sidewalks at the expense of abutting owners, if no such cost was included in the tax bill attacked by him. For like reasons, any invalidity of an ordinance authorizing a street commissioner to contract with a successful bidder for work is not available as a defense to a tax bill not covering work comprehended by the contract. (Mound City vs. Melvin, 205 Southwestern Reporter, 254.)

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Local Assessments Against Railroad Property

Under the statutes of Minnesota real estate owned or operated for railroad purposes is not subject to assessment for local improvements in cities, but the Minnesota Supreme Court holds in the recent case of State vs. Chicago, St. Paul, Minneapolis & Omaha Railway Co., 168 Northwestern Reporter, 180, that real estate owned by a railroad company, but leased to others for use as lumber and coal yards, etc., is subject to assessment as not being devoted to a "railroad purpose."

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Validity of Franchise Provisions

An ordinance adopted by the city of La Follette, Tenn., contracting with defendant for water and electric lights for public purposes and granting defendant the exclusive right to use the streets for supplying water and electricity to private consumers is so far divisible that invalidity of the latter provision does not affect the right of the defendant to insist upon performance of the former. But to entitle a water company to enforce specific performance of a contract with a city to supply water for public purposes, it must show substantial performance of a further part of the contract to supply water, impliedly of good quality, to the inhabitants for domestic use. A city which approved the source of a water company's supply, cannot defeat obligation to carry out a contract for a supply of water for fire protection because of minor defects in the water, due to such source and not removable by use of reasonable appliances and methods. A suit to compel specific performance of a contract being equitable in its nature, a court, in entering a decree requiring a city to carry out a contract for a water-supply for fire protection and for electric service to street lamps, may require the water and lighting company to agree to such modifications of the contract as may be just and equitable. (United States Circuit Court of Appeals, Sixth Circuit, La Follette Water, Light & Telephone Co. vs. City of La Follette, 252 Federal Reporter, 762.)

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Standard of Safety in Sidewalks

The care which the law requires a city to exercise to keep its public sidewalks in reasonably safe condition for use by pedestrians extends to travel in any general and usual mode, but a city is not to be held responsible for injury resulting from a pedestrian's cane or crutch accidentally catching in a small hole in a walk, resulting from a knot dropping out of a board walk, or a glass bull's-eye falling out of a walk, or from a crevice between stones. A city is entitled to expect that pedestrians will use a reasonable degree of care for their own safety and maintain a lookout for such slight defects as are unavoidable. (Kansas City Court of Appeals, Wilkerson vs. City of Sedalia, 205 Southwestern Reporter, 877.)

Moving-Picture Censorship

An ordinance of the city of Chicago requires the general superintendent of police to refuse permission to exhibit a moving picture that is "immoral or obscene, or portrays any riotous, disorderly or other unlawful scene, or has a tendency to disturb the public peace." An amendatory regulation authorizes issuance of a permit to exhibit a picture to persons more than 21 years old, where the picture has a tendency to create a harmful impression in the minds of children, but not in the minds of adults. Interpreting these provisions, it is held by the United States Circuit Court of Appeals, Seventh Circuit, that the harmful impression on the minds of children, for which the superintendent of police might refuse a permit, must be an impression caused by obscenity or other characteristic expressly forbidden by the ordinance mentioned. The superintendent has no power to add to the scope of the regulation his own ideas as to what might create harmful impressions in children's minds. (City of Chicago vs. Fox Film Corporation, 251 Federal Reporter, 883.)

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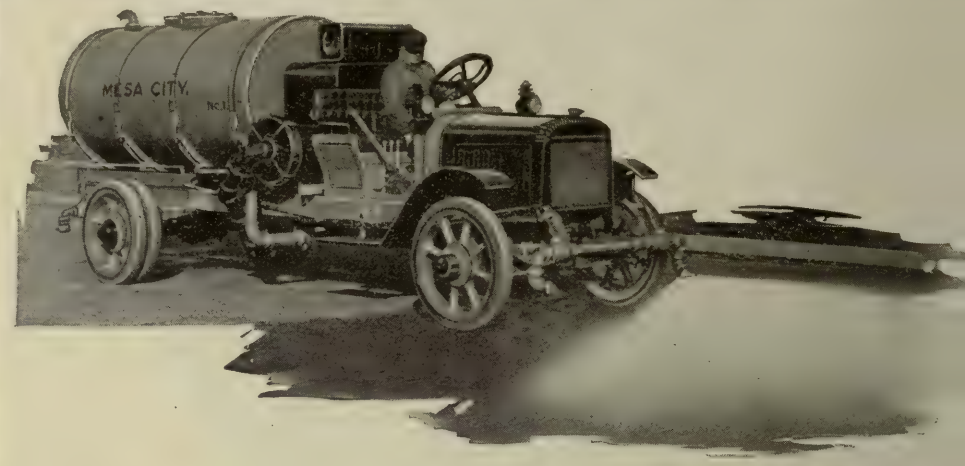
A Construction Contract Construed

Under a provision in a contract for the construction of a municipal conduit in a creek, requiring the contractor, at his own expense, to construct a flume or other device to take care of the waters of the stream, and carry them past the works in course of construction, the contractor was merely required to provide against the normal or usual flow of the creek. The provision cannot be interpreted as exonerating the city from liability for damage suffered by the contractor thru negligence of the city in permitting reservoir waters to be released in the stream. (Utah Supreme Court, Moran vs. Salt Lake City, 173 Pacific Reporter, 702.)

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Letting Sewer Contracts

A contract for sewer construction let to the only bidder and without advertisement inviting proposals was void, invalidating tax bills issued thereunder, where there was an existing ordinance requiring such advertisement, altho the city's charter did not require advertising. (Missouri Supreme Court, Thrasher vs. City of Kirksville, 204 Southwestern Reporter, 804.)



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Validity of Municipal Bonds

A proposition submitted to a municipal electorate to issue bonds in a specified amount for the *purchase or erection* of a water-works system is not invalid as submitting a double proposition under a single vote. Altho the Supreme Courts of Ohio and Kansas have determined that such a submission is invalid, the weight of authority is to the effect that such a proposition is to be considered, in substance, as a proposition to acquire a water-works system or other improvement either by purchase or construction, and that such submission is not invalid as submitting either a double or alternative question. The last-mentioned view has been taken by the Federal courts and the highest state courts of California, Missouri, Nebraska, South Carolina and Washington.

A statutory requirement for publication of a notice of election for four consecutive weeks "immediately prior" to such election was substantially complied with in the publication of a notice published for four consecutive weeks, altho the last publication was thirteen days before the election. And requirement for the same notice before sale of bonds was substantially complied with where there was publication for four consecutive weeks, altho the last publication occurred eleven days before the bond sale.

A municipal office being regarded as continuing regardless of changes in its incumbents, bonds signed by duly qualified officers may be delivered by their successors in office at the time when the bonds are actually sold and delivered. (New Mexico Supreme Court, City of Albuquerque vs. Water Supply Co., 174 Pacific Reporter, 217.)

✣ ✣

Fixing Fire Limits

The legislative officers of a municipality have broad discretion in the matter of determining where fire limits shall extend. Where an ordinance embraced the business district of a village within a fire district, it was not invalid as being discriminatory because territory embracing a garage and a livery stable just outside the district was omitted. (North Dakota Supreme Court, Village of Ashley vs. Ashley Lumber Co., 169 Northwestern Reporter, 87.)

Municipal Liability for Negligence

"The general rule as to the liability of municipalities for negligence in the construction and maintenance of water systems, lighting plants, and the like, operated for the private advantage and emolument of the muncipality, is that of a natural person; and for the negligence of its duly authorized agent in relation thereto, by which injury is done to another, without the fault of the injured party, the municipality is liable." But "a municipality is exempt from liability when injury results from a negligent performance of a governmental duty by one authorized to perform it, tho expense of the performance is borne by the municipality." Under these rules, it must be held that a hydrant constituting part of a city's fire protection system is maintained in the municipality's governmental capacity, and not as an incident to the sale of water to private consumers. Hence, the city is not to be charged with liability for injury to a traveler along a street or sidewalk because of negligence in placing the hydrant so near a publicly traveled way as to constitute an obstruction. (Vermont Supreme Court, Morgan vs. Village of Stowe, 104 Atlantic Reporter, 339.

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Notice of Intention in Improvement Proceedings

Under the statutes of Iowa, adoption by a city council of a resolution of necessity for constructing sewers and publication of notice of intention to proceed with their construction is essential to validity of further proceedings. Publication of a notice describing the location of a sewer merely as "thirteenth district main sewer as per plat, profiles, estimates now on file in the office of the city clerk in the city hall," and referring to the clerk's records for information as to location of the sewer and the character of materials to be used, was an insufficient compliance with a statute requiring the notice to describe the location of the improvement and the materials to be used. And this defect deprived the city council of power to proceed with construction of the sewer at municipal expense. (Iowa Supreme Court, Davenport Locomotive Works vs. City of Davenport, 169 Northwestern Reporter, 106.)







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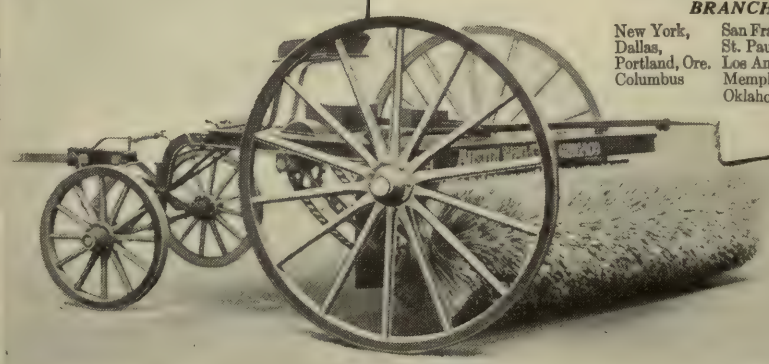
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Municipal and Civic Publications

BLANCHARD, ARTHUR H., Editor-in-Chief.

American Highway Engineers' Handbook. xxiv + 1,579 pp., 369 tables and 607 figures. John Wiley & Sons, Inc., 432 Fourth Avenue, New York. **$5.00**

This well-known highway engineering authority has compiled a standard, reliable and comprehensive volume on all phases of highway engineering and administration, with the coöperation of seventeen associate editors, each a specialist in his field. The editor starts his volume with a section on "Terminology of Highway Engineering." The list is complete and the definitions clear and concise. The terms and definitions are carefully chosen from the reports of special committees of eleven technical societies, and should constitute the standard for all highway engineers.

Section 2 covers mathematics, mechanics and structural materials, followed by a section on engineering geology. Section 4 very comprehensively deals with the wide field of preliminary investigations on highway locations. Surveys and office practice and the planning of roads and road systems make up Sections 5 and 6. The highway work in cities is fully covered by Section 7 on street planning. Grading, drainage and foundations complete Section 8. Sections 9 thru 17 cover earth and sand-clay roads, gravel and broken stone roads, and bituminous roads, as regards materials and construction, and maintenance. Section 13 specifically deals with dust prevention by the use of various palliatives. Wood and stone-block and brick pavements each constitute a section, followed by another on cement-concrete pavements. Street cleaning and the collection and disposal of waste and snow are handled excellently in Section 22. The problems of street car franchises, the location of car tracks and the effects of subsurface work on pipes and conduit systems on the pavements constitute Section 23. The following six sections deal with a comparison of roads and pavements, the construction of sidewalks, curbs and gutters and the use of highway signs, highway bridges, culverts, retaining walls, foundations and guard-rails, the preservation of materials used in highway structures, the financing of highway improvements and the organization and administration of highway departments.

Individually, these sections constitute valuable treatises on the various elements of highway engineering, and collectively they form the most useful book on the whole topic available to-day.

YERS, MAY, WILLIAMS, JESSE F., A. B., M. D., Professor of Hygiene and Physical Education, University of Cincinnati, and WOOD, THOMAS D., A. M., M. D., Professor of Physical Education, Teachers College, Columbia University.

Healthful Schools: How to Build, Equip and Maintain Them. xii +292 pp. 25 illustrations, numerous references and study questions accompanying each chapter. Houghton, Mifflin Company, Boston, Mass. **$1.50**

This is one of the Riverside Textbooks in Education, edited by Ellwood B. Cubberley, Professor of Education in Leland Stanford Junior University. The authors have taken the two main groups into which school hygiene has commonly been divided, namely, physical environment and school activities, and have tried to treat them as a unified whole in condensed form. Under the first head, educators have been prone to discuss such matters as school construction, fire protection, lighting and sanitation, without regard to medical inspection and supervision, playground activities, outdoor classes, and the like, which have formerly followed under the second head. Only recently has there been a realization in educational centers of the need for unified administration in these relative fields. This volume seeks to set forth the essentials the school administrator should know in order to safeguard the health of children committed to his care.

RACE, JOSEPH.

Chlorination of Water. First Edition. viii + 149 pp. Illustrations, diagrams and tables. John Wiley & Sons. **$1.50**

Chlorination stands to-day preëminently the best method of treating water to make it pathologically safe. Mr. Race has contributed an excellent link to the chain of literature on water sterilization. As a logical successor to Hooker's "Chloride of Lime in Sanitation," it may take its place on our shelves to-day, awaiting the unknown agent which may supplant chlorine in water sterilization.

Starting with a discussion of the history of chlorination. Mr. Race continues with chapters on the theories of the modus operandi of chlorine, the necessary dosage and the survival of bacteria in chlorinated water. The question of the cause of complaints, originating from causes both real and imaginary, is well handled. Bleach treatment and the use of liquid chlorine, electrolytic chlorine and hypochlorite are each treated historically and analytically. The use of chloramine, which was developed by Mr. Race in Ottawa, is fully covered in one chapter. The final chapter summarizes the valuable results of the introduction of chlorine in water-works practice, particularly in the reduction of typhoid rates in hundreds of cities.

TURNEAURE, F. E. Editor.

Johnson's Materials of Construction. Fifth Edition. Rewritten. xix + 829 pp., figures, diagrams, tables. John Wiley & Sons. **$6.00**

This valuable text and reference book, now in its fifteenth thousand, has been rewritten by M. O. Withey, Associate Professor of Mechanics in the University of Wisconsin, and James Aston, metallurgist with the A. M. Byers Co., of Pittsburgh, and edited by F. E. Turneaure, Dean of the College of Engineering of the University of Wisconsin. This latest edition differs from previous issues in the method of arrangement, a marked improvement having been effected. The scope of the work has been materially altered by the reduction of space devoted to some topics which could be treated more concisely, and, on the other hand, more space has been devoted to newer topics in which recent experience and research has taught much of value. Many old figures have been eliminated or redrawn, and the number of diagrams greatly increased to replace tables which could not be readily analyzed by the reader.

LIPKA, JOSEPH, Assistant Professor of Mathematics, Massachusetts Institute of Technology.

Graphical and Mechanical Computation. ix + 259 pp. Diagrams. 1918. John Wiley & Sons. **$4.00**

A concise treatise embodying a course on graphical computation given by the author at the Massachusetts Institute of Technology. The chief function of the volume, aside from its value as a textbook, is to carry to engineers the message of graphical computation which lessens by many hours the labor of many engineering calculations.

COMMONS, JOHN R., and associates.

History of Labor in the United States. Two volumes: Volume I, xxv + 623 pp.; Volume II, xx + 620 pp. Macmillan Company, 64 Fifth Ave., New York **$6.50** per set.

A special study of the history of labor movements with their philosophy and ideals, as distinguished from the history of labor organizations for the technical application of labor to the processes of production. In the preparation of these volumes Professor Commons had the assistance of David J. Saposs, Helen L. Sumner, E. B. Mittelman, H. E. Hoagland, John B. Andrews and Selig Perlman. A classified bibliography of 37 pages and an index of almost equal length make these volumes especially valuable for reference.

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ODELL, JOHN M.

The Location, Construction and Maintenance of Roads. v + 213 pp. Diagrams and tables. D. Van Nostrand Co., 25 Park Place, New York. **$1.15**

This valuable volume is a reprint from the Good Roads Year Book, 1917, and, altho published under the name of single author, is the result of generous contributions of material and advice from the entire country. Methods or materials used in but a single locality or under very peculiar conditions are not dealt with; rather it was the author's aim to produce a book showing the best practice and the most pertinent statistics for most conditions, excluding all extraneous matter. All phases of rural road location, surveys, drainage, construction and maintenance are well handled. The text is particularly written for public officials not technically educated. One chapter, "The Reasons for Improving Roads," is printed "as a concise justification of the expenditure of public funds for road improvements, a subject which highway engineers must frequently discuss at public meetings."

TILEY, L. H.

Home Grounds, Their Planning and Planting: Text Prepared for The American Association of Nurserymen. 48 pp. Issued by Bobbink & Atkins, Rutherford, N. J. **50c.**

In this interesting booklet two methods of planting are discussed—the formal and the free. Illustrations and plans accompany the discussion. which also includes the treatment of narrow city lots and the development of more extentious suburban homes. Mr. Bailey also discusses the place of the flower and vegetable garden in the general planting scheme. The booklet is of interest to both landscape architects and home owners.

SHOP, JOSEPH BUCKLIN.

A Chronicle of One Hundred and Fifty Years: The Chamber of Commerce of the State of New York, 1768-1918. xvi + 310 pp. Published by Charles Scribner's Sons, New York. **$5.10**

This interesting volume is a fascinating narrative based on the records of the Chamber of Commerce for a century and a half. Begun seven years before the American revolution, this organization has had before it for consideration practically every problem that has confronted the American people since that time. Its records make a very human story and throw unusual side lights on the development of the American people and their economic prosperity.

KESTER, ROY B., M. A., B. C. S., Certified Public Accountant; Instructor, School of Business, Columbia University.

Accounting, Theory and Practice. Two volumes: Volume I. xxiv + 607 pp., **$3.15**; Volume II, xxiv + 796 pp., **$4.15.** Published by The Ronald Press Co., 20 Vesey St., New York.

These volumes are frankly textbooks, giving the scope of the work offered in the first and second years of the School of Business of Columbia University, for, while there have been many excellent treatises on accounting, there has been a dearth of textbooks. Volume I includes all the elemental business facts, then proceeds step by step thru the non-technical terms into the ledger, the books of original entry, and finally to the various business papers and documents which constitute the source of all the entries described. Volume II is devoted primarily to a study of the corporation, its accounting and financial problems. The other chapters treat miscellaneous matters, a knowledge of which is essential to the students of accounting.

IGNATIUS, MILTON B., LL. M., of the New York Bar, Assistant to General Valuation Counsel, New York Central Lines; formerly Statistician and Accountant, Public Service Commissions of New York.

The Financing of Public Service Corporations. xviii + 508 pp. The Ronald Press Company, 20 Vesey St., New York. **$5.00**

Much of the friction caused by the attempt to regulate capitalization thru public service commissions has been due to differences in viewpoint between corporation officials and bankers, on the one hand, who have insisted upon "practical" considerations, and representatives of the public, who, making a system of control in the public interests, had to reach fundamental principles which the utilities condemned as "theoretical." If each side had advanced a few steps further, according to Mr. Ignatius, they would have arrived at common ground. To point the way to this common ground is the mission of this book. It gathers into one volume all the important aspects of public service corporation financing, from the inception of the enterprise to the expenditure of the proceeds and the permanent record thereof. A comprehensive 51-page index is one of the most valuable features of the volume.

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wn Planning Institute, Papers and Discussions, 1916-17.

ated in its arrival, but none the less interesting on account, is the volume of proceedings of The Town nning Institute of Great Britain for 1916-17. American lents of city planning who desire an understanding of lish city planning development during war-time will much in this volume to stimulate thought and arouse rest. It relates not to the governmental housing blem, of which we have heard so much, but to the n planning development that must underly good sing. This volume includes interesting discussions of n planning in Wales, housing and town planning rements at the end of the war, the great new town s for the city of Dublin, monumental memorials and r relation to town planning, town planning developts in southern India,, road construction and improvets by means of town planning, and a supplement ting to professional practice and town planning instiexamination. 234 pp. (Apply to The Town Planning itute, 4 Arundel Street, London, W. C. 2.)

ctrolysis and Its Mitigation.

52 of the Technological Papers of the Bureau of ndards. The Bureau of Standards has been engaged some time past in a general investigation of the subof electrolysis and its mitigation. This report, repnting the results of their studies, is confined princiy to a discussion of the subject of the prevention of trolysis in metallic structures, including gas and er systems and lead-covered cables. The need for regions regarding electrolysis mitigation is dwelt upon, recommendations are made as to the general scope hese regulations. 137 pp. (Sold only by the Superndent of Documents, Government Printing Office, shington, D. C. Price, 35 cents.)

Lectures on Engineering Practice.

Volume II of the "J. E. Aldred Lectures on Engineering Practice" repreduces the lectures given in 1917-18 at The Johns Hopkins University in a course dealing with the practical phases of engineering problems. Some lectures which were included that will prove of special interest to the city and county officials are: "Steam-Electric Power Plant Design," by A. S. Loizeaux; "The Relation Between Civil and Military Engineering," by Major General William M. Black, Chief of Engineers, U. S. A.; "The Development of Concrete Road Construction," by Arthur N. Johnson; "The Coal Problem," by E. G. Bailey; "The Growth of Electric Systems," by Julian C. Smith; and "The Control of Steam Pollution," by Earle B. Phelps, Hygienic Laboratory, American Public Health Service. 236 pp., octavo. Bound in heavy paper covers. Price, $1.00. (Published by The Johns Hopkins Press, Baltimore, Md.)

Highway Cost Keeping.

The fundamental principles of cost keeping in general, and the special methods of cost keeping for highway work, illustrated by numerous tables and sample recording forms, are contained in Bulletin No. 660, issued by the United States Department of Agriculture, Washington, D. C. 52 pp.

The Florida Tank Privy.

An 8-page pamphlet of the above title describes in detail a tank privy, simple in construction, which can be used at small rural schools, depots and other public buildings not having water-works facilities. (Send your request for this pamphlet to George W. Simons, Jr., Chief Sanitary Engineer, State Board of Health, Jacksonville, Fla.)

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THE roadbuilding boom has started. Illinois and Pennsylvania have voted bond issues of $60,000,000 and $50,000,000, respectively, for state-wide highway systems. Many other states and counties are considering ways and means of voting similar issues —some, even larger.

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e Problems of Reconstruction.

ompilation of the opinions and suggestions of many ers collected by the Standing Committee on Plans and paganda of the Canadian National Reconstruction ups. Some of the topics receiving consideration are obilization and employment, capital and labor, political industrial status of women, vocational training of sol- s, education, land and agriculture, health and housing, state's relation to industry, taxation and finance and stitutional problems. (This report will be sent on re- t of 25 cents by Francis Hankin, Honorary Secretary, ntreal, Quebec.)

lage Life After the War.

cial report of conferences held in England under the nices of the Rural Organization Council to consider ous questions relating to the development of rural Topics discussed at these conferences include: food luction, organization of satisfactory living conditions rural districts, recreation, village beautification, rural cation, rural industries and handicrafts and village lements for disabled soldiers. (Published by Headley s, Publishers, Ltd., Kingsway House, Kingsway, don, W. C. 2. Price, 1 shilling net.)

uth Norwalk's Public Works.

Fifth Annual Report of the second taxing district of city of Norwalk, formerly city of South Norwalk, ers of the South Norwalk water-works, electric light power plant, library, docks and other buildings, con- s the annual reports of expenditures made by the sev- departments of the district and an appendix devoted he appropriations and tax of city and districts.

wark's City Manual.

manual of the Board of Commissioners of Newark, J., compiled by W. J. Egan, City Clerk, comprises a plete directory of the five departments of the city gov- ment, a statistical summary of Newark's resources and rovements, and epitome of Newark's history and her in the great war.

Second Annual Report of St. Louis City Plan Commission.

This 8-page summary of the work of the City Plan Commission of St. Louis during the year 1917-1918 includes list of zoning conferences, report of accomplishments in street widening, straightening and building, and studies made of street-car traffic and public recreational service. A statement of the year's expenditures is appended. (Those wishing copies of this report may secure them by addressing Burton Bunch, Secretary City Plan Commission, St. Louis, Mo.)

Planning Buildings for Daylight.

The lack of exact data showing the relative amount of daylight illumination obtained by different kinds of open spaces has resulted in unscientific "hit-or-miss" building codes and in buildings containing dark rooms that are a menace to health. The object of this paper, reprinted from *The Architectural Forum*, is to present a part of the data necessary for the framing of scientific height and area regulations. Numerous diagrams and tables illustrate the method used in computing the amount of daylight illumination in any given inner or outer court.

Activities of Municipal Reference Library of Chicago.

A summary of the work accomplished in the eight months' period ending August 31, 1918, recounting number and nature of requests for information received in the library and giving detailed analysis of the most important requests and the plans of the library for 1919. (A copy will be forwarded to any reader of THE AMERICAN CITY by the Municipal Reference Library, 1005 City Hall, Chicago, on receipt of 10 cents in postage.)

Report of Board of Electrical Commissioners of Wallingford, Conn.

The annual report of the above Board for the year ending July 31, 1918, includes a general summary, statistical tables of expenditures, curve charts, and illustrative drawings of electrical apparatus. 54 pp. (Write to the Board, as above.)

Methods · Materials · Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

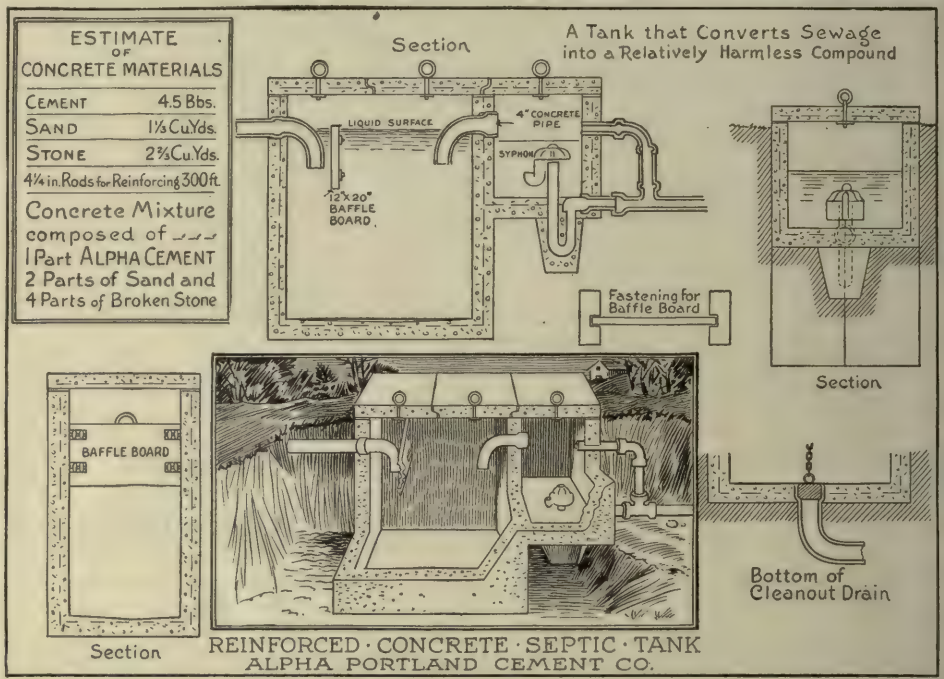


HOW ST. LOUIS SPRINKLES A WIDE STREET IN ONE OPERATION

A Motor Sprinkler With Short Wheel-Base for City Streets

The accompanying view shows an autocar, a product of The Autocar Company, Ardmore, Pa., being used for sprinkling a 36-foot street in St. Louis. These Autocars are of special value for use on the average narrow city street because the short wheel-base permits the truck to turn around without backing. Another advantage of these cars is that they are not open to the objection, often made against heavier equipment, that they shake buildings adjacent to the streets being sprinkled. The Autocar tanks have a capacity of 750 gallons, which is found ample when water plugs are established at convenient points for refilling the tanks, and they are equipped with special gravity sprinkling devices.

Get these Practical ALPHA servi sheets on Concrete Constructio



The above gives an idea of the timely and practical information afforded by the ALPHA Service Sheets and Bulletins. Such helpful details are available on the following concrete improvements:

Walkway	Storage Cellar	Tennis Court	Dipping Vat	Gate Posts
Driveway	Spring House	Concrete Roof	Tanks, Troughs and Pools	Walls, Sills, Lintels
Roads	Small Dam	Barns and Silos	Piers for Small Boats	Workingmen's Homes
Small Bridges	Milk House	Corn Crib	Garden Furniture	Garages
Culvert	Ice House	Smoke House	Greenhouse	Porch, Cellar and Stable Floors
Foundation	Manure Pit	Hog House	Storage House	
Gutter and Curb	Septic Tank	Poultry House	Fence Posts	

Any of these Sheets and Bulletins that interest you will be sent free on request if you live east of the Mississippi. Available also on request are the practical handbook, ALPHA CEMENT, How to Use It, 96 pages, illustrated, and recent issues of ALPHA AIDS, devoted to storage buildings, municipal hog houses, overcoating of old dwellings, oil storage tanks, coal pockets, cold-weather concreting, post building, etc. Please mention AMERICAN CITY.

ALPHA PORTLAND CEMENT COMPANY General Offices: EASTON, PA.
BRANCH OFFICES: New York Boston Philadelphia Pittsburgh Baltimore Savannah

Concrete for Permanence

An Asphalt Expansion Joint for Streets and Sidewalks

"Foresight is better than hindsight" in the matter of providing paving joints for concrete pavements, roofs and sidewalks. The wise street commissioner will use expansion joints that will adjust themselves to the expansion and contraction of the bricks, wood blocks or concrete used in the pavement, otherwise he will soon see a cracked pavement that will be a source of considerable expense to the city for repairs. The Aspromet paving joint, manufactured by the Aspromet Company, Pittsburgh, Pa., is made from a special all-asphalt compound, which not only is so tough and pliable that it can be roughly handled on the job without damage, but also is said to be so flexible that it can adjust itself to the expansion and contraction of pavements in all kinds of weather, from the extreme heat of summer to the most intense cold of winter. This joint is said to have met with entire success in many Government, municipal and county highway projects.

✣ ✣

The Use of Tractors for Municipal and County Work

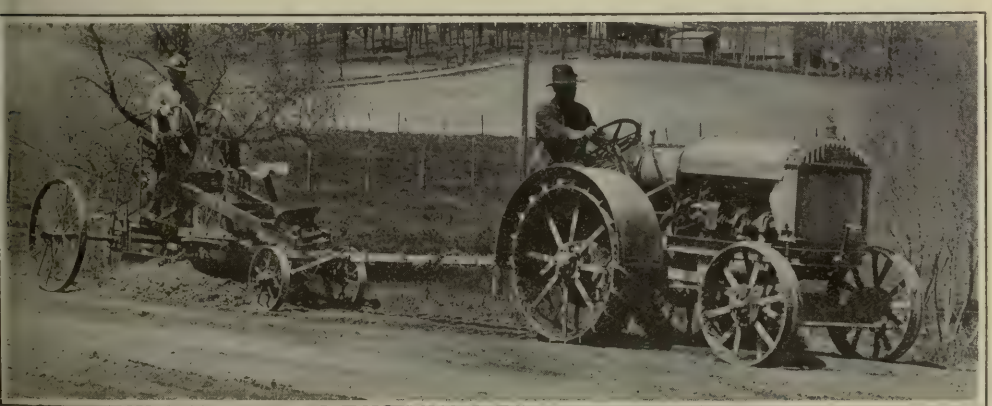
Municipal and county officials are making a study of the adaptability of the tractor in connection with street repairs and highway construction work, and there is no doubt that the tractor is becoming a more and more indispensable part of municipal and county equipment. The illustration herewith shows a Dart tractor pulling a ten-foot road scraper on the Hawkeye Highway in Iowa. Printed matter in regard to this tractor and further information as to its usefulness on public improvement work can be secured from M. D. Herron, sales director of the Dart Truck and Tractor Corporation, Waterloo, Ia. An impotant and worth-while feature is the design of the wheels, as they are run on roller bearings and have dust-proof hubs. In fact, all the working parts are entirely protected from dust.



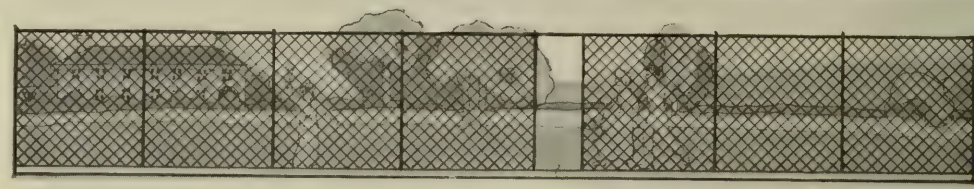
METHOD OF HOUSING VALVE UNDER ASPHALT PAVEMENT

Cast-Iron Products for Municipal Use

Included in the wide variety of cast-iron products manufactured by The Casey Hedges Co., Chattanooga, Tenn., are: soil pipe and fittings, gas and water service boxes, valve and roadway boxes, power and heating boilers, lawn vases and lawn settees, gas and electric lamp pillars, and sanitary drinking fountains for parks, schools, streets and public buildings. Water commissioners will be especially interested in the accompanying illustration, showing the application of a valve casing for an asphalt pavement. This casing is 24 inches in height and the diameter of cover 17 inches. It will become more and more widely used by municipalities as its value is better known.



AN EFFICIENT COMBINATION FOR ROAD UP-KEEP



School Children Deserve The Best

EXCELSIOR CHAIN LINK FENCE

If Used Around School Buildings Gives Absolute Protection To the Children Yet Does Not Shut Off Light and Air.

EXCELSIOR CHAIN LINE FENCES are made of heavy galvanized wires generally woven in 2 inches or 2¼ inch diamond mesh. Although without the rust proof finish, they are exceedingly strong and rigid, are unclimbable, and in general splendidly adapted for use around factories and grounds where the fullest measure of protection is sought. For protecting factory grounds this style of fencing is unexcelled.

In addition to the Chain Link Fence we also make EXCELSIOR RUST PROOF FENCES, which differ from ordinary wire fences in construction and finish. They are made of large, smooth wires, No. 9 lateral and No. 8 vertical, with every intersection held rivet tight by our Excelsior Patent Steel Clamp

As Excelsior Fences contain no weak, twisted wires they possess the maximum rigidity and strength, and are therefore highly desirable for parks and playgrounds.

When it comes to enclosing public or private tennis courts our fencing is especially desirable, as it is not only beautiful in appearance but also really substantial for years of service

For beautifying public grounds, flower beds, etc., use Excelsior Rust Proof Flower Guards, Tree Guards, Arches, Trellises.

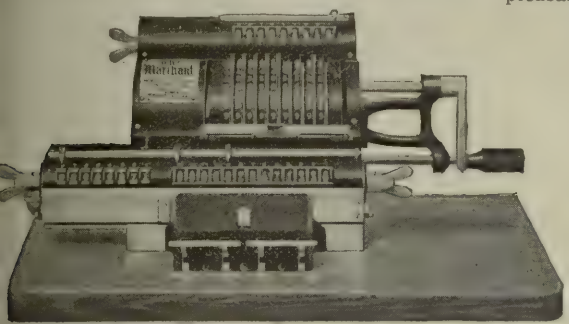
Write for Illustrated Catalog G.

WRIGHT WIRE CO. **Worcester, Mass.**



A Rapid Calculating Machine

How much time is being lost in your calculations? How much time are you wasting in apportionment of taxes, extending taxes, etc., without the use of a calculating machine? Are you using the latest improved calculating machine? The actual proof of the method or machine is the time taken to perform the operation. $89889 \div 9136 = 9.839$. This can be divided and proved by the Marchant calculating machine in 8 seconds, with only 8 turns of the handle. The points of excellence claimed for the Marchant machine are accuracy, automatic proof, speed, simplicity, stability and compactness. The Marchant is used thruout the United States in the following classes of



A MACHINE FOR PROMPT FIGURING

calculations: tax extension, decreasing or increasing valuations, figuring interest on tax delinquencies, apportioning funds of treasurer, apportioning of school and road funds, bond and redemption interest, all classes of engineering calculations and also for new and old bridge work calculations. Further particulars can be obtained by writing to the Marchant Calculating Machine Company, Fourth Street, Oakland, Cal.

✣ ✣

A Portable Motor Pump and Its Many Uses

In many cities fire and street cleaning apparatus has been motorized, and this motorized equipment has proved most satisfactory, from the standpoint of either economy or efficiency. The "Seco" portable pumping apparatus, mounted on Kelly-Springfield chassis, has been constructed by the Springfield Engineering Company, Bushnell Building, Springfield, Ohio, to provide a cheaper and more efficient method of cleaning catch-basins, culleys, etc.

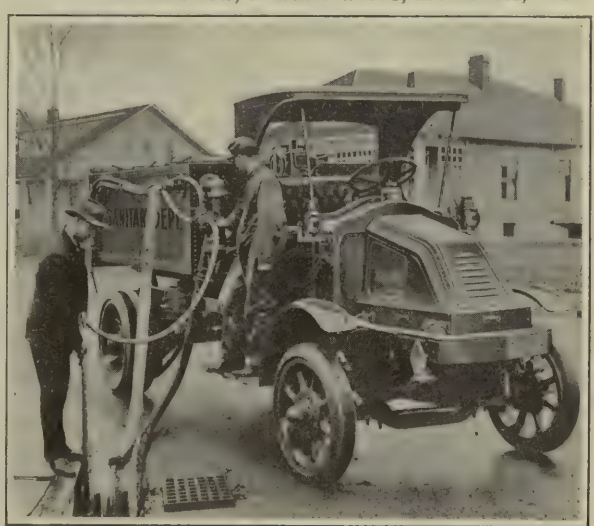
The accompanying photograph shows the simple and secure way in which the priming and overflow hose is carried. It also shows the special "Seco" pump and sediment chamber. The covered tank is primed by attaching the inlet hose to any convenient hydrant. The pumping apparatus is then driven up to or near the sewer, cesspool or gulley to be cleaned. The large suction hose is attached to the suction chamber and the free end of the hose is placed in the sewer or gulley. The overflow pipe is laid at the side to permit the overflow water to run back into the sewer or gulley, as the water in the tank is replaced by the solids. A special clutch is engaged to drive the pump, from which the water is forced from the tank thru the sediment chamber, creating a suction which elevates the sediment from the sewer or gulley thru the special chamber into the tank. At no time does any of the sediment pass thru the pump. The filthy contents of a sewer or gulley can be removed without leaving any unpleasant traces of the operation. A mechanically operated power driven hoist permits dumping of the contents of the tank without obstruction by baffle plates or partitions. One man can easily operate all the levers, as they are placed immediately behind the driver and securely attached to the back of the seat, and hence are accessible and as easily handled as the motor truck itself.

In addition to its work as a suction pump, the "Seco" apparatus has been so designed as to be readily converted into a motor truck apparatus by the addition of a few easily adjusted appliances. Some of the many uses to which this apparatus may be adapted are: spraying or sprinkling of plants, trees and shrubs; cold water painting or disinfecting; long-distance pumping; street sprinkling and flushing; general hauling; and use as a heavy-duty dump truck handling coal, ashes, heavy building material, etc.

✣ ✣

Lapidolith for Concrete Floors

Using "Lapidolith" on the concrete floors, old and new, in water-works, fire-houses, filtra-



PORTABLE PUMPING APPARATUS FOR CLEANING CATCH-BASINS

HERE IT IS The most complete Catalog of Road Building Machinery issued in this year of 1919

Whether you need Road Machinery or not, you need a copy of this interesting book. It is yours free and without obligation if you ask for it.



We can't tell you all about our Road Building Equipment in this space. Our Catalog tells the story. A copy is reserved for you.



Little Winner Light Reversible Road Machine. Made in several sizes—6, 8, 10 and 12 ft. Blades.

We furnish Road Graders for every class of work, light, medium heavy or extra heavy. Our graders are known all over the country for their durability and excellent working qualities. Before you purchase a Road Grader, don't fail to investigate the Winner line.

We furnish Guaranteed Repairs for All Standard Road Machines

Check the Machine or Machines you are interested in, cut out this coupon and mail to us. We will be glad to submit prices and full information, together with a copy of the Catalog shown above.

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THIS IS OUR LINE:

- ☐ Light Road Grader
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- ☐ Gravel Screening Plant
- ☐ Gravel Crushing Plant
- ☐ Street Sweeper
- ☐ Street Sprinkler
- ☐ Hauling Engine
- ☐ Road Drag
- ☐ Wheel Scrapers
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THE GOOD ROADS MACHINERY CO., Inc.
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Please send me full information on the Lines chec with prices:

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on plants, pump stations, c., makes them hard as anite, dust-proof, water-oof and resistant to the tion of most chemicals. etters have been received om many city officials by Sonneborn Sons, Inc., 264 earl Street, New York, stifying to the excellent sults achieved by the use "Lapidolith."

Mr. Cullan A. Witter, ommissioner of Public afety, Binghamton, N. Y., rites:

"In June of the present year s Department purchased a rrel of 'Lapidolith.' The re-lts obtained by us from the e of 'Lapidolith' have been ghly satisfactory, and I take asure in recommending it for e upon concrete floors for the rposes suggested."

The following letter of Walter Ackerman, Chief ngineer and Superintend-t, Board of Water Com-issioners of the City of uburn, N. Y., is another stimonial as to the success this product in use:

entlemen:
would like to have you send about five gallons of your pidolith. We treated a floor h this material and it was ex-mely successful. We have had make some changes in this rk and we have a new section the floor which has not been ated, and, as we have no ma-ial left, I simply want enough finish up this work."

✣ ✣

ew Representative New England

H. H. Kinsey, New Eng-nd representative of the ptune Meter Co., located Boston, Mass., for the st twenty years, has been pointed New England representative for the arren Foundry & Machine Co., of New rk, manufacturers of cast iron pipe, with ices at 201 Devonshire Street, Boston, Mass.

✣ ✣

ire-Cut Lug Brick tent Sustained

The Dunn-Cut Lug Brick Co., of Conneaut, io, has been given the decision by the United ates Circuit Court of Appeals in its suit ainst Joseph Nicholson et al., of Toronto, io, for infringement of patent. The court rmed the validity of the Dunn patent, l stated that an injunction should issue ainst Nicholson restraining him from king or selling wire-cut lug brick in in-ngement of the Dunn patent on wire-lug brick.



Courtesy of Spring Hill Nurseries

AN ATTRACTIVE STREET PLANTING OF BETULA BIRCH IN TIPPECANOE CITY, OHIO

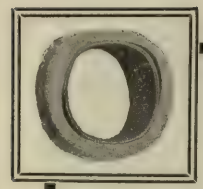
Landscape Architect Reopens Office

Thomas H. Desmond, landscape architect, announces that he has reopened his office and offers his services for the design and supervision of town and country places, parks and cemeteries, land subdivisions, and town planning. His address is Ensign Building, Simsbury, Conn.

✣ ✣

Justin R. Weddell With Firestone Co.

News of the appointment of Justin R. Weddell, formerly sales manager of the Corday & Gross Company, as advertising manager of the Firestone Tire & Rubber Company, Akron, Ohio, will be of interest to advertising circles. Mr. Weddell assumed his new duties on February 1.



Bi-Lateral Fire Hose construction keeps the rubber from cracking or leaking. If you want the best fire hose at the lowest cost per year of service, send for our catalogue.

Bi-Lateral Fire Hose Co.
326 W. Madison Street Chicago, Ill.

We specialize in Equipment for Motor Fire Apparatus

Complete Stock of General Fire Department Supplies

Sole Manufacturers of
Anderson-Hale Fire Station Door Openers

Estimates Cheerfully Given

THE ANDERSON COUPLING AND FIRE SUPPLY COMPANY
Kansas City Kansas

Dayton Airless Tire

GUARANTEED
2½ YEARS

Made exclusively for Fi
Department use.

Ride like Pneumatics
No Punctures
No Blowouts

Write for information

The Dayton Rubber Mfg. C
Dayton, Ohio

FABRIC FIRE HOSE

is of an unusually careful manufacture
WAX and PARA GUM TREATED

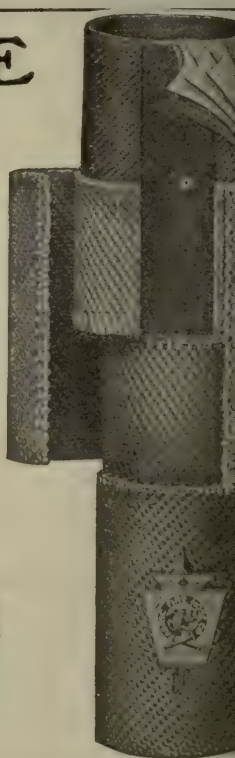
The lining is of fine Para Gum, hand made, four calendered, smooth bore or lap-jointed

Circular balance woven, each strand of cotton is treated to a bath of melted Wax and Para Gum, then cabled and woven into the jackets.

Absolutely waterproof, making the ideal hose for fire departments.

Treatment lubricates and solidifies the strands of cotton, assuring long wear.

Made in all sizes from 1 to 6 inches inside diameter.



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COR. DUANE & CHURCH STS., NEW YORK

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Patentee and Sole Manufacturer



"Giants" At Work

This "Giant" Pneumatic is exactly built for the man who must have speedy service in safety. Both are high on the records of service "on the firing lines" over here.

The lively strength in Firestone rubber stands up under heavy loads at high speed. Its resilience prevents skid and absorbs vibration. Ask the Firestone man for proof. Or write us.

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Beauty and Safety

For

City Parks, Play Grounds
Retaining Walls
Jails and Courtyards
Cemeteries, Reservoirs
and Bridges

are both assured in



AGEN
WANT

STEWART IRON FENCE

"The Standard of the World"

Chicago recognizes Stewart value and has installed approximately 45,000 feet of Stewart fence and 50 pairs of gates of the design here illustrated.

The Stewart Catalog will be a valued help to officials and others interested in city improvements.

The Stewart Iron Works Co., Inc., No. 527 Stewart Block CINCINNATI, OHIO.

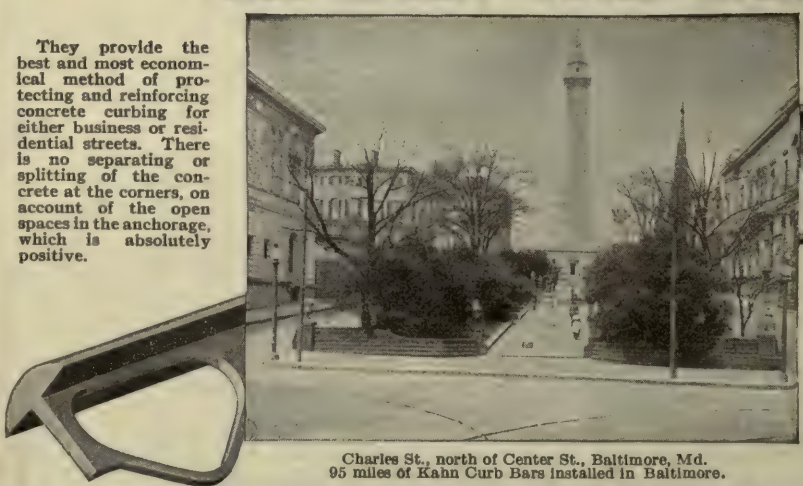
The World's Greatest Iron Fence Builders

Request the Cata

showing a wide sele of designs for purp mentioned—also line Lamp Standards, Br Lanterns, Settees, Vase ornamental iron & wire

BACK OF THE PERFECT CURBING ARE KAHN CURB BARS

They provide the best and most economical method of protecting and reinforcing concrete curbing for either business or residential streets. There is no separating or splitting of the concrete at the corners, on account of the open spaces in the anchorage, which is absolutely positive.



Kahn Curb Bars manufactured special rolled steel tions, and are he galvanized after f ing. They are nished in either str or curved bars and vide a protectio 1⅝ inches. Stan lengths 8, 10 an feet.

Charles St., north of Center St., Baltimore, Md.
95 miles of Kahn Curb Bars installed in Baltimore.

TRUSCON STEEL COMPANY

(FORMERLY TRUSSED CONCRETE STEEL CO.)

YOUNGSTOWN, OHIO.

WAREHOUSES AND REPRESENTATIVES IN PRINCIPAL CITIES

TRUSCON STEEL CO
TRUSCO
BUILDING PRODUCTS



HEAVY loads that would ordinarily sink to the hubs on "solids" are buoyed along at increased speed on 'NOBBY CORD' PNEUMATICS.

hese big tires—

—heighten the speed
—reduce vibration—and
—lengthen the life of your customer's truck.

ect your trade by handling reliable equipnt.

United States Tires are Good Tires



A Dust Layer, Binder and Weed Killer ALL IN ONE

This roadway has been treated with SOLVAY—hence it has a smooth, compact surface, requires no sprinkling and is free from ruts, weeds, dust and sun glare.

SOLVAY

Granulated

Calcium Chloride

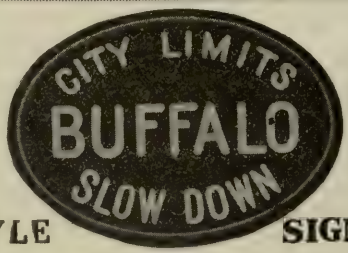
is the most satisfactory and least expensive material for making gravel, macadam and dirt roadways, drives and paths dustless, smooth, clean and durable.

SOLVAY is a dry, stainless, odorless chemical preparation. It can be applied by inexperienced workmen, either with hand shovels or a horse-drawn distributor.

Its effects are lasting. It is not only a dust layer, weed killer and binder, but prevents sun glare, acts as a harmless germicide and cuts roadway upkeep cost to the minimum.

Write for a free copy of the "Solvay Road Book."

SEMET-SOLVAY CO.
410 Milton Ave. Solvay, N. Y.



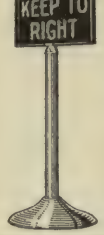
LYLE SIGNS

(Carved in Armco Iron)

Made from ⅛ inch Armco iron plates. Shipped complete with metal posts and brackets, ready for installation.

Our booklet filled with street, road and traffic ideas is yours for the asking.

LYLE CORRUGATED CULVERT CO. Dep't B. **Minneapolis, Minn.**

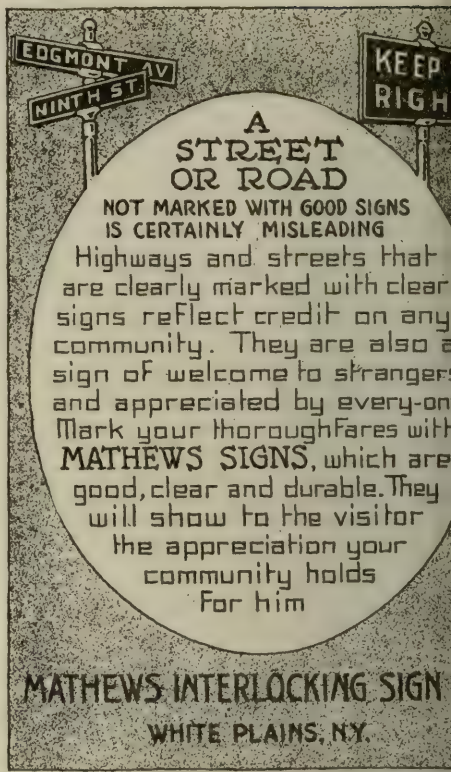


Silent Traffic Officer

"Where there is a sign there is a reason." Made to arrest the eye and convey the message quickly and clearly. Designed for durability and economy. Electric or lantern lighted.

Write for catalog and prices.

Union Iron Products Co.
Drawer H, East Chicago, Ind.



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THE SHAWNEE TRIPLE

"The Spring's the Thing"

SHAWNEE MOWER CO., 5 Beekman St., N. Y.

THE GAMEWELL FIRE ALA TELEGRAPH CO.



"Registered U. S. Patent Office"

Manufacturers of Fire Alarm and Police Signal TELEGRAPHS for Municipalities and Private Parties

The Gamewell system of to-day the outcome of the combined invent genius and mechanical skill of ma whose valuable services the compa has been able to secure during t past fifty-seven years, in pursuance its policy of meeting at any cost t requirements of the varied conditio existing in different localities.

Correspondence Solicited.

General Office and Works:
Newton Upper Falls, Ma

EDEXCO
GLASS HEAD **MAP PINS**

Solid color glass heads. Steel points. Stay where put. 2 sizes—16 colors.

Used with city maps and Edexco Mechanical Graphs to show details of improvement work.

Send 30 cts., stamps or coin for Big Sample Package of Map Pins, EDEXCO Map Mount, Charting Papers, Curve Cards and Catalog. Catalog & Illustrated Booklet Free.



EDUCATIONAL EXHIBITION CO.
127 Custom House St.
Providence, R. I.

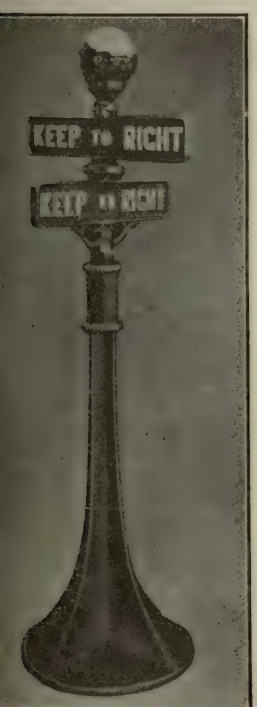
SERVICE

CLE SAM—when he commandeered our new six-acre plant for the duration of the war—gave us the opportunity and privilege of proving our 100% loyalty and service to our country. In serving "America First", we depended largely upon the indulgence of our friends in the municipal field—In this we have not been disappointed.

In the very near future, we will be able to resume the normal manufacture of our product—Guaranteed Porcelain Enameled Iron Municipal Signs. Then, the same spirit of loyalty and service with which it has been possible for us to serve our Government, will be at the disposal of our former trade in the municipal field and those, in addition, whom we hope to serve. This co-operation has been our trade policy for the past twenty years.

We hope that our patriotism and efforts will merit your confidence. We want your inquiries and specifications covering your needs for Porcelain Enameled Iron municipal signs, license plates and house numbers. Remember, "BALTO" Guaranteed Porcelain Enameled Iron Municipal Signs.

THE BALTIMORE ENAMEL & NOVELTY CO.
BALTIMORE, MD.



SIGNS OF MERIT QUALITY AND PERMANENCE

No municipality, as well as no manufacturer, can consider that his patriotic duty is complete without giving employment to every returning soldier into civil life. It will be impossible for all to find a place in the shop, therefore it is up to the City Fathers to show due appreciation for the former defenders of true liberty.

You are called upon to improve your highways, streets and pavements. These will not be complete until the question of placing proper signs on them has been decided; and when considering highway and street signs it is for your interest to give first thought to attractiveness and permanency—in other words, don't do that which you will be required to do over again in a few years. All we ask of you is to request our catalog, showing combination street sign and lighting standards, traffic signs with electric light or without, highway and junction guide-boards, school, danger and railroad-crossing warning signs that are always efficient and a decided credit to any community.

THE LEBANON MACHINE CO.
Highway Directory Engineers
LEBANON NEW HAMPSHIRE





SIMPLEX STEEL TAPED CABLES

SERVICE

Hundreds of towns and cities today use

SIMPLEX STEEL TAPED CABLES

to distribute current for street lighting. Satisfactory service is assured because the cables are designed for just this type of underground distribution.

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PROFIT

Low cost of installatio and maintenance make

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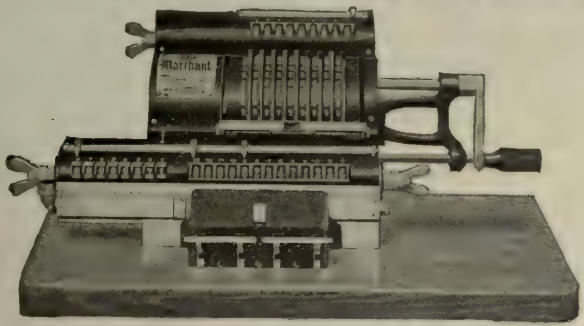
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Try the up-to-date method of preventing costly errors by using

Speed

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The Marchant is used throughout the United States in the following classes of calculations: Tax Extension, Decreasing or Increasing Valuations, Figuring Interest on Tax Delinquencies, Apportioning Funds of Treasurer, Apportioning of School and Road Funds, Bond and Redemption Interest All Classes of Engineering Calculations and also for New and Old Bridge Work Calculations. Get the Book of Facts.

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The modern method of applying various kinds of paints and other protective coatings is by the use of compressed air. Better results are obtained over the old hand-brushing method, also a great saving in both time and labor.

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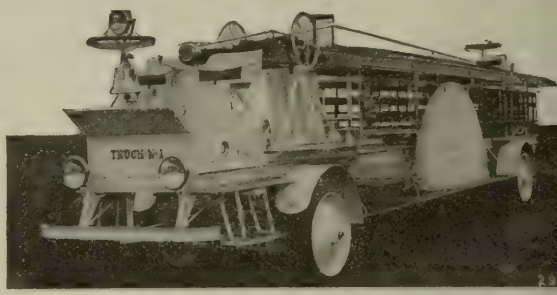
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One man puts the ladders where you want them. No More Cranking.

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YOUR TOWN NEEDS A PLAYGROU

Every town should have at least one playground where children can pl safety and away from danger. Think of the unnecessary accidents that every day to children playing in the streets! Equip a proper playgroun avoid them. In towns with playgrounds you will find healthier and ha children who will become better citizens.

Are you helping your junior citizens?
Playgrounds are a good investment.

Send us your ground space; we will furnish estimates, and send printed m descriptive of our model, up-to-date playground apparatus.

HOWARD GEORGE **Philadelphia,**
"The Playground Outfitter"

ALL MUNICIPALITIES NEED PLAYGROUNDS



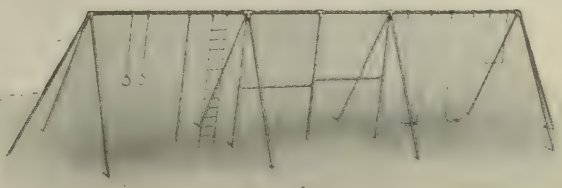
The Playgroun not only better the physical and moral tone of a city, but it is a rea live investment It cuts the per petual moving population to a minimum which saves your manu facturer and your merchant.

American Appa ratus will produce results.

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We have "Everything for the Playground"

Including Slides, Swings, Ocean Waves, See-Saws, Giant Strides, Outdoor Gymnasium Combinations, etc. Also a complete line of Athletic Goods at wholesale prices.

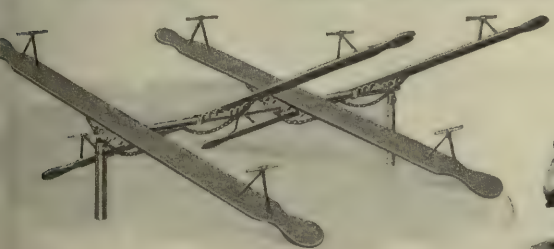
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Below is a water bonded Gravel Road treated with Stanolind Paving Asphalt at 300°F., 45 pounds pressure, applied one-half gallon to the square yard by special pressure tank wagon shown in other illustration.



One application of Stanolind Paving Asphalt on Macadam and Gravel Roads has given three years' service with practically no expense. Builds more substantial surface at half the cost of light oil treatment for three years. Can be applied on roads previously treated with Road Oil.

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(INDIANA)

910 South Michigan Ave. — **Chicago, Ill.**

—wrote the Sales Manager to the Road Commissioner

LETTER No. 2



a tractor doesn't
nd up to the work,"
says, "and is not
stantly on the job
othing else counts
much."

"DEPENDABILITY—that's the first thing you make sure of in any piece of machinery you buy. The same with a tractor—if it doesn't stand up to the work and isn't *constantly* on the job when you want it, nothing else about it counts for much."

"And actual work in the field under all sorts of conditions for a period of years is the only *real* test."

"Ten years ago we sold the first OilPulls for breaking virgin sod in the great Northwest—a heartbreaking job for horse flesh, a stiff pull for the best of tractors. And those same OilPulls have been at it ever since, delivering continuous, sure, dependable service. That's the kind of a recommendation you want behind your road building machinery—PROVED DEPENDABILITY."

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"And the OilPull wheels—we experimented and worked for years in developing the best constructed and most suitable wheels for tractor work. OilPull wheels fit the tractor and fit the job."

"Then add to this, accessibility—ease of getting at all parts for care and adjustment—protection of all working parts from dirt and the weather—a perfect oiling system."

—"that's how we *build* dependability into the Rumely OilPull."

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size for every road job

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The Enamel-like Wall Coating

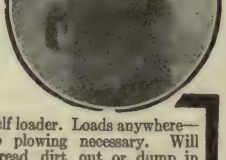
Cemcoat is furnished in either Gloss or Flat.
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Particularly adapted for safety lines on pavements.

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Department 27

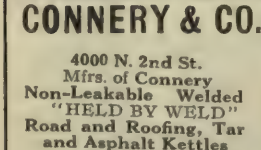
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Solves problems moving dirt, sand and gravel. One man and 4 horses do work of 4 men and 8 horses. Cuts cost of moving dirt 50% or better.

1½ Yards of Dirt In 30 Seconds



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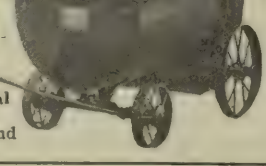
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Sizes, 10 to 1,000 Gallons
Styles, 17 Selections
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Don't envy those who have used these Kettles for Past 35 years. FOLLOW SUIT
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Write for Catalogue and Prices to Kettle Dept.

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puts enough surplus life and resi ance into wood blocks to make th outwear several ordinary paving jo

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Has none of the objectionable features of the black asphaltic oils or tar preparations

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Is It Prepared to Deal with the Unique and Vital Issues the War Has Created?

These issues are too big for any one man. They are too big for anything less than the combined strength of the strongest intellects in your city.

This strength is available if your Chamber of Commerce is organized to its full power with a large representative membership, adequate income, efficient organization machinery, and the confidence of the community at large.

Other cities throughout North America, from Ontario to Texas, and from the Atlantic to the Pacific, are awake to the fact, and are preparing to develop through their Chambers of Commerce every ounce of power that wise leadership can bring them. During the past three months the following Chambers of Commerce have used the services of the American City Bureau in reorganization and expansion campaigns.

AUBURN, NEW YORK: The membership goal for the Auburn Chamber of Commerce was placed at 600, a fair estimate for a city of 32,000 population. A three days' campaign achieved the remarkable total of 1,117 members.

BRUNSWICK, GEORGIA: Here, too, the goal was much more than reached, and in the face of the fact that an influenza epidemic and a local election were taking place at nearly the same time. The goal was 300. 520 members were secured.

SARNIA, ONTARIO: The Sarnia Chamber of Commerce has established a record for North America for cities of 12,000 population. 600 members were secured on a basis of $25.00—$1.25 for every man, woman and child in Sarnia.

CLEBURNE, TEXAS: 550 members were secured for the first day. The campaign has just finished with 716 members.

MASSILLON, OHIO: This campaign was conducted while the influenza epidemic was raging. **No public meetings were possible.** Still the campaign finished with 622 members.

LOCKPORT, NEW YORK: A campaign was conducted here over three years ago by The American City Bureau. The membership has been rising steadily ever since. There were 501 members at the end of this campaign, 540 at the end of the first year and 580 the second year. In a second campaign the Bureau has just conducted the membership has been raised to 733.

HOBOKEN, NEW JERSEY: A campaign was conducted here, also, three years ago, by the Town Development Co. The campaign just finished has more than doubled the former membership, raising it from 414 to 975.

ELMIRA, NEW YORK: The Elmira Chamber of Commerce has 1,058 members as a result of a recent campaign under the direction of the Bureau.

CLARKSBURG, WEST VIRGINIA: This campaign proved a hard battle; but the battle was won, as usual. The final outcome was 653 members.

HAGERSTOWN, MARYLAND: The Hagerstown Chamber of Commerce has been organized to a strength of 264 members.

Following are a number of cities in which the American City Bureau is conducting campaigns or has contracted to conduct them in the near future:

New London, Connecticut	**Bartlesville, Oklahoma**
Hutchinson, Kansas	**Guelph, Ontario**
Lewiston, Maine	**Stratford, Ontario**
Mahaony City, Pennsylvania	**Paterson, New Jersey**
Pontiac, Michigan	**Brantford, Ontario**
Chattanooga, Tennessee	**Oneida, New York**
Marshall, Texas	**Knoxville, Tennessee**

Would it not be worth while to find out more about the services that are bringing these advantages to these communities? Why not ask us to tell you more about what The American City Bureau is prepared to do?

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with which is merged TOWN DEVELOPMENT COMPANY

Tribune Building **New York City**

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A closet that will not clog under or
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and without the horizontal shelf in
bottom near outlet of the bowl, comm
to most bowls. This means a quick g
away. The seat is extra strong w
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the flush valve shown. The Improv
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greater cleanliness and cause less rep
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any price.

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home atmosphere
an entire absence
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2 minutes of all
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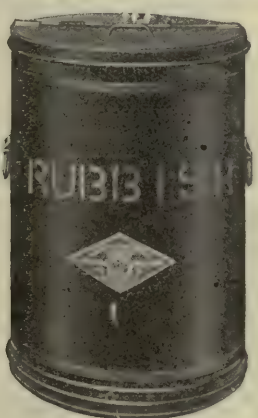
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"As Strong as the Name Implies"

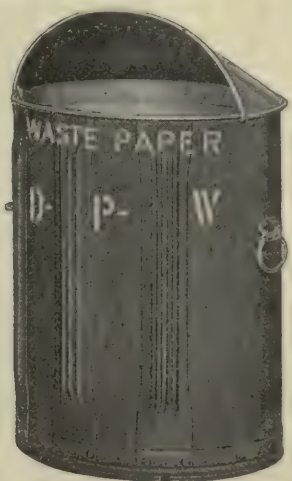
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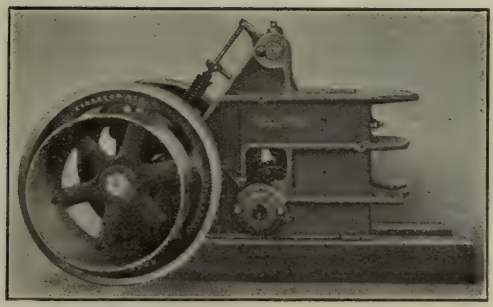
She has kept the wheels of industry going; tilling the soil; bending over bench and lathe. In counting h and chemical laboratory she loaned her brains to the cause.

In telephone service, also, a of capable, loyal daughters America still find expression their ambition and ability. T girls are privileged to play an i pensable part in the nation's fare. They have in their kee the myriad avenues of teleph communication through which nation's industry is guided.

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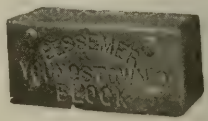
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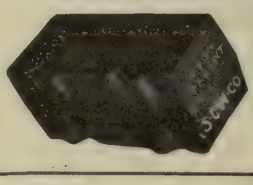
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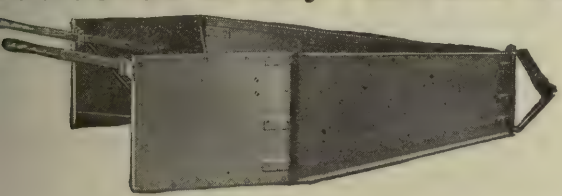
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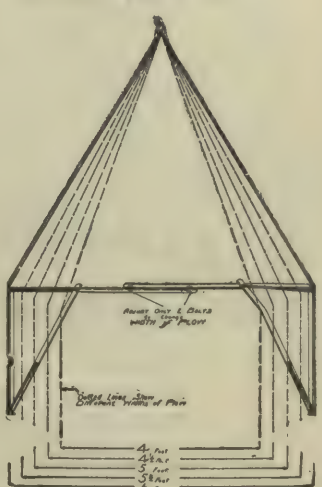
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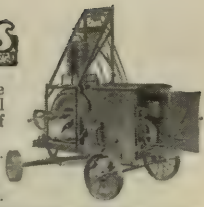
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shown in accompanying photograph, demonstrated in various branches of nicipal and county work the advantages handling material in the most economical y, resulting in the saving of labor, time, d money.

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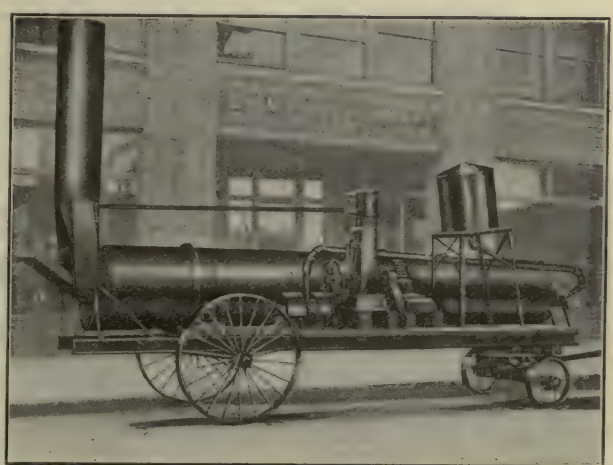
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Hardy wherever Japan Barberry grows.
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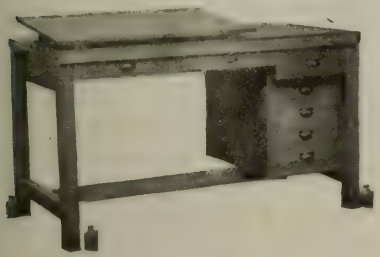
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Before making purchases consult the Municipal Buyer's Guide

See Page 100

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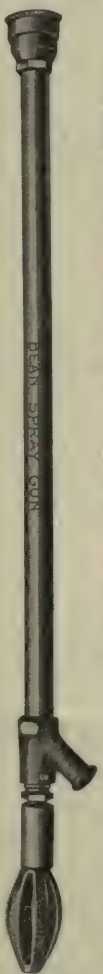
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The Municipal Buyers' Guide

A classified reference index of advertisers in this issue of The American City

The alphabetical index of advertisers which follows this list (see page 112) will give you the page numbers of all advertisements, thus enabling you to secure the full address of the advertisers, as well as other information which may be of value.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 112

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Continued on page 107

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Aspromet Co.
Carey Co., Philip.

Fencing.
Enterprise Iron Works.
Stewart Iron Works Co.
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Fertilizers.
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Filters-Feed Water.
Pittsburgh Filter Mfg. Co.

Filtration Plants.
N. Y. Continental-Jewell Filtra. Co.
Norwood Engineering Co.
Pittsburgh Filter Mfg. Co.

Fire Alarm Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Fire Alarm Signals, Steam.
Union Water Meter Co.

Fire Alarm Systems.
Anderson Coupling & Fire Sup. Co.
Gamewell Fire Alarm Telegraph Co.

Fire Department Apparatus.
Acme Motor Truck Co.
American-LaFrance Fire Engine Co.
Autocar Co., The
The Clyde Cars Co.
Couple-Gear Freight Wheel Co.
Federal Motor Truck Co.
Garford Motor Truck Co.
General Motors Truck Co.
Republic Motor Truck Co.
Studebaker.
White Co., The.

Fire Department Supplies.
American La France Fire Engine Co.
Anderson Coupling & Fire Sup. Co.

Fire Escapes.
Dart Motor Truck & Tractor Co.

Fire Extinguishers, Chemical.
American-LaFrance Fire Engine Co.
Anderson Coupling & Fire Sup. Co.

Fire Hose.
Anderson Coupling & Fire Sup. Co.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.

Fire Pumps.
Worthington Pump and Machinery Corporation.

Flexible Joints.
U. S. Cast Iron Pipe & Fdry. Co.

Flower Bed Guards.
Wright Wire Co.

Fountains.
Puro Sanitary Drinking Foun. Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Furnaces, Melting.
Leadite Co.

Garbage Cans—See Cans for Ashes and Garbage.

Garbage Wagons.
Acme Motor Truck Co.
Austin-Western Road Machy. Co.
Autocar Co., The
Federal Motor Truck Co.
Garford Motor Truck Co.
General Motors Truck Co.
Holzbog & Bro., Geo. H.
Republic Motor Truck Co.
Studebaker.
Watson Wagon Co.
White Co., The.

Gas, Chlorine.
Electro Bleaching Gas Co.

Gas Engines.
Dart Motor Truck & Tractor Co.
Allis Chalmers Mfg. Co.
Foos Gas Engine Co.
Worthington Pump & Mach. Corp.

Gaskets.
Leadite Co.

Gas Meters.
General Electric Co.
Pittsburgh Meter Co.

Gasoline Pumping Engines.
Bond Co., Harold L.
Worthington Pump & Mach. Corp

Gasoline Storage Tanks.
Bowser & Co., Inc., S. F.

Gates For Parks and Cemeteries.
Enterprise Iron Works.
Stewart Iron Works Co.
Wright Wire Co.

Gauges, Loss of Head, Rate of Flow
Simplex Valve & Meter Co.

Gauges—Surface, Reservoir and Special Water Works.
Clark Co., H. W.
Simplex Valve & Meter Co.

Graders.
Austin-Western Road Machy. Co.
Lyle Corrugated Culvert Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Graphite.
Dixon Crucible Co., Joseph.

Grass Seed.
Burpee Co., W. Atlee.
Dreer, Henry A.
Thorburn & Co., J. M.

Health and Amusement Devices.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Heating Kettles.
Connery & Co., Inc.
Dyar Supply Co.
Littleford Bros.

High Pressure Hydrants.
Smith Co., A. P.

Hoists.
Allis Chalmers Mfg. Co.

Hose.
Anderson Coupling & Fire Sup. C
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.

House Numbers.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co

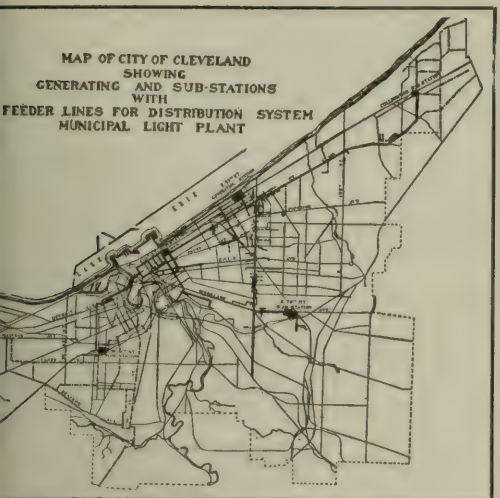
Hydrants.
James B. Clow & Sons.
Columbian Iron Works.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Norwood Engineering Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.
Smith Co., A. P.
Wood & Co., R. D.

Indicator Posts.
Columbian Iron Works.
Flower-Stephens Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.

Insulating Materials.
Carey Co., Philip.
General Electric Co.

Insulated Wire and Cable.
General Electric Co.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Continued on page 104



We Can Do The Same For You!

We are Consulting Engineers for Municipalities.
We designed, built and operated the Cleveland Municipal plant. Its maximum rate is 3 cents per K. W. hour.
We represent cities in negotiations with the Utility Corporations.
We prepare valuations and represent cities before the State Commissions in rate cases for Electric Light, Gas, Telephone, Water Works and Railway Fare Cases.

Write for Printed Matter

F. W. BALLARD & CO.
Engineers
Swetland Building Cleveland, Ohio



Off The Streets With Those Wires

And wipe from the books of your future the heavy losses in the repair of wind-swept, sleet-stricken wires, that your company must inevitably incur unless you put your overhead wires safely underground. Do it NOW—ask us what ORANGEBURG *Fibre Conduit* is annually saving public utility companies in overhead upkeep. See Book D.

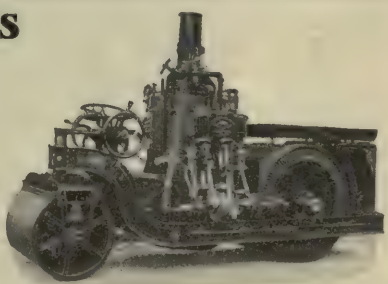
THE FIBRE CONDUIT COMPANY
ORANGEBURG, N. Y.
New York Boston Chicago San Francisco

ERIE TANDEM PAVING ROLLERS

Includes everything that makes for the best in Road Rollers. They are strong, simple in construction—durable and economical and easy to operate. Our first roller built in 1887 is still doing its "bit."

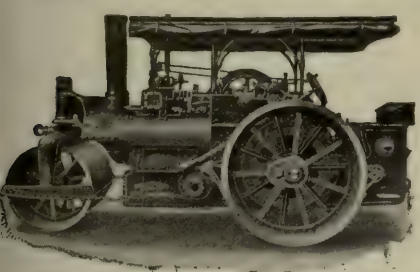
Erie Rollers are guaranteed against breakage or wear for 5 years.

Write for illustrated material.



THE ERIE MACHINE SHOPS **ERIE, PA.**

QUALITY MACHINERY



BUFFALO PITTS ROLLERS

Are purchased by discriminating buyers because of the many years of satisfactory service which they will render, the low repair costs and their general reliability.

ASK THOSE WHO OWN THEM

All sizes All Types Write for catalogue

Built only by

THE BUFFALO-SPRINGFIELD ROLLER COMPANY
SPRINGFIELD, OHIO

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 112

Jail Cells and Jail Work.
Stewart Iron Works Co.

Joints, Flexible.
Coldwell-Wilcox Co.

Kettles, Tar and Asphalt.
Connery & Co., Inc.

Landscape Architects.
Arnold, Sheffield A.
Arnold & Tripp.
Cole, Louis S.
Cullen, Wm. E.
Davey Tree Expert Co.
Helder, Arthur H.
Higgins, J. Wallace.

Lapidolith.
Sonneborn Sons, Inc., L.

Lawn Mowers.
Austin Western Road Machy. Co.
Pennsylvania Lawn Mower Works.
Shawnee Mower Co.

Lawn Sweepers.
Everwear Mfg. Co.
Pennsylvania Lawn Mower Co.

Lead Furnaces & Caulking Tools.
Smith, A. P.

Leadite.
Leadite Co.

Lead Wool.
United Lead Co.

Leak Finders.
Clark & Co., H. W.
Pitometer Co.

Lighting Standards.
Cutter Co., George.
Electric Railway Equipment Co.
Stewart Iron Works Co.

Liquid Chlorine.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Electro Bleaching Gas Co.
Great Western Electro Chem. Co.
Hooker Electrochemical Co.
Pennsylvania Salt Co.
Wallace & Tiernan Co., Inc

Lubricants.
Dixon Crucible Co., Joseph.

Manhole Covers.
Clark Co., H. W.
James B. Clow & Sons.
Columbian Iron Works.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Merry-Go-Rounds.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Metal Preservatives.
Dixon Crucible Co., Joseph
Harrisons, Inc.

Meter Books.
Buffalo Meter Co.
Pittsburgh Meter Co.

Meter Boxes.
Buffalo Meter Co.
Clark Co., H. W.
Columbian Iron Works.
Ford Meter Box Co.
Hersey Mfg. Co.
McNutt, Lewis
Pittsburgh Meter Co

Meter Couplings.
Clark Co., H. W.
Ford Meter Box Co.
McNutt, Lewis
Pittsburgh Meter Co.

Meter Holding Devices.
Ford Meter Box Co.
McNutt, Lewis

Meter Testers.
Buffalo Meter Co.
Clark Co., H. W.
Ford Meter Box Co.
Neptune Meter Co.
Pittsburgh Meter Co.

Meters—See Water and Gas Meters.

Meters for Oil and Gasoline.
S. F. Bowser & Co.

Motor Trucks.
Acme Motor Truck Co.
Autocar Co., The
Couple-Gear Freight Wheel Co.
The Clyde Cars Co.
Dart Motor Truck & Tractor Co.
Denby Motor Truck Co.
Federal Motor Truck Co.
Garford Motor Truck Co.
General Motors Truck Co.
Indiana Truck Corp.
Kelly-Springfield Co.
Republic Motor Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Motor Fire Apparatus—See Automobile Fire Apparatus.

Motor Truck Trailers.
Watson Wagon Co.

Nurseries.
Andorra Nurseries.
Bobbink & Atkins.
Donaldson Co.
Dreer, Henry A.
Elm City Nursery Co.
Kohankie & Son, Henry.
Meehan Co., Thomas.
Riverview Nursery & Seed Co.
Smith Co., W. & T.
Storrs & Harrison Co.

Oil Tanks.
Bowser & Co., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.

Ornamental Metal Fencing.
Stewart Iron Works Co.
Wright Wire Co.

Packing.
Carey Co., Philip.

Paint, Preservative.
Sonneborn Sons, Inc.
Dixon Crucible Co., Joseph.

Paint Gun (Pneumatic).
Spray Engineering Co.

Park Benches.
American Playground Device Co.
Enterprise Iron Works.
Stewart Iron Works Co.

Park and Lawn Sprinklers.
Spray Engineering Co.

Paving Inspection.
Allentown Testing Laboratories.

Paving Machinery and Tools.
Equitable Asphalt Maintenance Co.
Erie Machine Shops
Warren Bros. Co.

Paving Materials. (See also und
Brick and Cement.)
Aspromet Co.
Carey Co., Philip.
Standard Oil Co.
Texas Co.
Warren Bros. Co.

Paving Mixers.
Warren Bros. Co.
Worthington Pump and Machine
Corporation.

Paving Mixtures.
Standard Oil Co.

Pencils, Drafting, Office.
Dixon Crucible Co., Joseph.

Pipe.
American Cast Iron Pipe Co.
Cast Iron Pipe Pub. Bureau, R.
McWane, Sec.
Central Foundry Co.
Clow & Sons, James B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry Co.
Lynchburg Foundry Co.
Massillon Iron & Steel Co.
U. S. Cast Iron Pipe & Foundry C
Warren Fdry. & Machine Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A

Pipe Covering.
Carey & Co., Philip.

Pipe Cutters.
Smith Co., A. P.
Strickler & Bros., W. W.

Pipe Joint Compound.
Dixon Crucible Co., Joseph.

Pipe Jointing Materials.
Leadite Co.
United Lead Co.

Pipe Locators.
Clark Co., H. W.

Pipe (Riveted Steel.)
Pittsburgh-Des Moines Steel Co

Pitch.
Carey Co., Philip.

Pitometers.
Pitometer Co., The.

Pito Tubes.
Simplex Valve & Meter Co.

Playground Apparatus.
American Playground Device C
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.

Plows.
Burch Plow Works.

Plumbing Supplies.
James B. Clow & Sons.

**Poles, Combination Railway a
Lighting.**
Cutter Co., George.
Electric Railway Equipment Co.

Police Patrols.
The Autocar Co.
General Motors Truck Co.
White Co., The.

Police Signal Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Police Signal Systems.
Gamewell Fire Alarm Telegraph

Portland Cement.
Alpha Portland Cement Co.
Pennsylvania Portland Cement

Continued on page 106

Now That We Have Got The Kaiser Licked

Let's get down to hard pan in roads which are so much needed to take care of motor truck transportation.

Why? Some of the roads in this country look as if there had been a few shells landed here and torn them up.

ROADS? YES, AND GOOD ROADS,

were never more needed than they are today. It is safe to say motor truck transportation and operation expense would be reduced 75%, if the roads on which they travelled were surfaced with

WARRENITE



BOSTON POST ROAD

Warrenite Road, Fairfield Ave., Fairfield, Conn., laid over old macadam

Let us help you with our expert service in making up your plans for roads to be surfaced this year.

SURFACE YOUR ROADS WITH WARRENITE

The modern country-road surface. A most reliable American product.

Write today for Warrenite illustrated booklets, specifications and forms of mixture agreement available to all experienced contractors.

WARREN BROTHERS COMPANY

Executive Offices BOSTON, MASS.

DISTRICT OFFICES

NEW YORK, N. Y.
LOS ANGELES, CAL.
RICHMOND, VA.
TORONTO, ONT.
WINNIPEG, MAN.
CHICAGO, ILL.
PORTLAND, ORE.
NASHVILLE, TENN.
MONTREAL, P. Q.
SAN FRANCISCO, CAL.
PHOENIX, ARIZ.
ST. LOUIS, MO.
UTICA, N. Y.
VANCOUVER, B. C

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 112

Publishers.
Engineering News-Record.

Pumping Machinery.
Allis Chalmers Mfg. Co.
Bond Co., Harold L.
Bean Spray Pump Co.
Deming Co.
Wood & Co., R. D.
Worthington Pump and Mach. Corp.
Yeomans Bros. Co.

Pumps for Oil and Gasolene.
Bowser & Co., S. F.

Ramshorn Meter Holding Frame.
Ford Meter Box Co.

Repair Lids for Service Boxes.
Clark Co., H. W.

Road and Street Machinery.
Acme Motor Truck Co.
The Clyde Cars Co.
Austin-Western Road Machy. Co.
Baker Mfg. Co.
Buffalo-Springfield Roller Co.
Connery & Co., Inc.
Dyas Supply Co.
Erie Machine Shops.
Garford Motor Truck Co.
Good Roads Machinery Co.
Haiss Wagon Loader Co.
Littleford Bros.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Republic Motor Truck Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Universal Road Machinery Co.
Warren Bros. Co.
White Co., The.

Road Binders.
Semet-Solvay Co.
Standard Oil Co.
Texas Co.

Road Culverts.
Burch Plow Works Co.
Good Roads Machy. Co.
James B. Clow & Sons.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
U. S. Cast Iron Pipe & Fdry. Co.
Wood & Co., R. D.

Road Drag and Street Scrapers.
Austin-Western Road Machy. Co.
The Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Rochester Can Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Road Oil.
Dustoline for Roads Co.
Standard Oil Co.

Road Oilers.
Acme Motor Truck Co.
The Autocar Co.
Austin-Western Road Machy. Co.
General Motors Truck Co.
Good Roads Machinery Co.
Republic Motor Truck Co.
Studebaker.
Universal Road Machinery Co.
White Co., The.

Road Rollers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Erie Machine Shops.
Good Roads Machinery Co.

Rock Crushers.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Universal Road Machinery Co.
Worthington Pump & Mach. Corp.

Roofing Materials.
Carey Co., Philip.
Efficiency Products Co.

Rubber Tires.—See Tires, Rubber.

Rust Preventing Material.
Dixon Crucible Co., Jos.

Sand Spreaders.
Buffalo Municipal Equipment Co.

Sand Testing Machines.
Kolesch & Co.

Sanitary Drinking Fountains.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Scarifiers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Universal Road Machy. Co.

Seeds, Plants and Bulbs.
Burpee Co., W. Atlee.
Dreer, Henry A.
Storrs & Harrison Co.
Thorburn & Co., J. M.

Service Boxes.
Clark Co., H. W.
James B. Clow & Sons.

Service Box Finders.
Clark Co., H. W.

Sewage Disinfection.
Electro Bleaching Gas Co.

Sewage Pumps and Ejectors.
Otterson Auto-Eductor Co.
Springfield Engineering Co.
Yeomans Bros. Co.

Sewer Buckets.
Champion Potato Machinery Co.

Sewer Castings.
Clark Co., H. W.
Dee Co., Wm. E.
Enterprise Iron Works.

Sewer Cleaning Apparatus.
Buffalo Municipal Equipment Co.
Champion Potato Machinery Co.
Turbine Sewer Machine Co.

Sewer Pipe.
Dee Co., Wm. E.

Sewer Rods.
Bond Co., Harold L.
Champion Potato Machinery Co.
Turbine Sewer Machine Co.

Sheer Gates.
Chapman Valve Mfg. Co.
Columbian Iron Works.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Signs—Iron and Wire.
Buffalo Municipal Equipment Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Stewart Iron Works Co.
Union Iron Products Co.

Sleeves and Valves.
Flower-Stephens Mfg. Co.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Sluice Gates and Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Columbian Iron Works.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Rensselaer Valve Co.

Smoke Stacks.
Pittsburgh-Des Moines Steel Co.

Snow Cleaning Machinery.
Baker Mfg. Co.
Good Roads Machinery Co.
Newport Culvert Co.
Russell Grader Mfg. Co.
Owensboro Ditcher and Grader Co

Soil Pipe (Cast Iron).
Abendroth Bros.
Alabama Pipe & Foundry Co.
American Enameling Mfg. Co.
American Foundry & Pipe Co.
Anniston Foundry Co.
Bessemer Soil Pipe Co.
Campbell Mfg. Co.
Central Foundry Co.
Charlotte Pipe and Foundry Corp
Coosa Pipe & Foundry Co.
Crown Pipe and Foundry Co.
Gadsden Pipe Co.
Haines, Jones & Cadbury Co.
Johnson Co., J. D.
Krupp Foundry Co.
Medina Foundry Co.
National Pipe & Fdry. Co.
Reading Foundry & Supply Co
Salem Brass & Iron Mfg. Co.
Sanitary Co. of America.
Somerville Iron Works, The
Standard Foundry Co.
Superior Mfg. Co.
Union Foundry Co.
Weiskittel & Son Co., A.
Wetter Mfg. Co., H.

Spraying Machinery for Trees and Shrubs.
Bean Spray Pump Co.
Deming Co.

Spray Nozzles.
Bean Spray Pmup Co.
Spray Engineering Co.

Standpipes.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.

Steel Form for Drainage Tile.
Northwestern Steel & Iron Works

Steel Plate Work.
Pittsburgh-Des Moines Steel Co.

Street Cleaners Carts.
Studebaker.

Street Cleaning Machines (Motor Driven).
Elgin Sales Co.

Street Flushers.
Acme Motor Truck Co.
Buffalo Municipal Equipment Co
Clyde Cars Co
Dart Motor Truck & Tractor Co.
Denby Motor Truck Co.
Garford Motor Truck Co.
General Motors Truck Co.
Indiana Truck Corp
Kelly Springfield Motor Truck Co
Republic Motor Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Continued on page 108

PENNSYLVANIA
Quality
LAWN MOWERS



MOST mowers cut well at first—the crucial test of quality comes only through long, hard service.

That's why "PENNSYLVANIA" *Quality* Lawn Mowers hold the good opinion of every man who uses them.

The easy-running, clean-cutting qualities last.

Distribute the first cost over the long years of service you get, and "PENNSYLVANIA" *Quality* Mowers prove to be the most economical you can buy.

Sold by Hardware Dealers and Seedsmen

PENNSYLVANIA LAWN MOWER WORKS
JOHN BRAUN & SONS
FOUNDED 1877 PHILADELPHIA

This trade mark is on the handles of:

"Pennsylvania"
"Pennsylvania, Jr."
"Pennsylvania Golf"
"Pennsylvania Putting Greens Mower"
"Continental"
"Great American B. B."
"Shock Absorber"
"Quaker City"
"Red Cloud B. B."
"Orchid B. B."
"Daisy"
"New Belmont"
"Bellevue"
"Panama"
"Delta B. B."
"Electra"
"Pennsylvania Pony"
"Pennsylvania Horse"
"Pennsylvania Grand Horse"
"Pennsylvania Trio Horse" (86 in. cut)

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisers follows this classified list. See page 112

Street Lamps—Electric.
General Electric Co.

Street Lamp Posts.
Cutter Co., George.
Electric Railway Equipment Co.
Lyle Corrugated Culvert Co.
Stewart Iron Works Co.

Street and Road Graders.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Street and Road Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Union Iron Products Co.

Street Sign Posts.
Cutter Co., George.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.

Street Sprinklers.
Acme Motor Truck Co.
American Car Sprinkler Co
Austin-Western Road Machy. Co.
Autocar Co., The
Buffalo Municipal Equipment Co.
The Clyde Cars Co.
Denby Motor Truck Co.
Federal Motor Truck Co.
Garford Motor Truck Co.
General Motors Truck Co.
Kelly-Springfield Motor Truck Co
Republic Motor Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Sweepers.
Austin-Western Road Machy. Co.
Elgin Sales Co.
Studebaker.
Universal Road Machinery Co.

Street Trash Cans.
American Can Co.
Rochester Can Co.
Steel Basket Co.

Surveyors Instruments.
Buff & Buff Co.
Kolesch & Co.

Tanks, Storage for Oils and Gasoline, etc.
Bowser & Co., Inc., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pittsburgh-Des Moines Steel Co.

Tanks and Towers.
Chicago Bridge and Iron Works.
Newport Culvert Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A.

Tapping Machines.
Smith Co., A. P.

Tar & Asphalt Spreaders.
White Co., The.

Tar Kettles.
Good Roads Machinery Co.
Connery & Co., Inc.
Littleford Bros.
Warren Bros. Co.

Testing Laboratories.
Allentown Testing Laboratory Co.

Tires, Rubber.
Dayton Rubber Mfg. Co.
Firestone Tire & Rubber Co.
Fisk Rubber Co.
U. S. Tire Co.

Traction Engines.
Buffalo Springfield Roller Co.

Traction Trains.
Buffalo Springfield Roller Co.

Tractors.
Acme Motor Truck Co.
American-La France Fire Engine Co.
Dart Motor Truck & Tractor Co.
Garford Motor Truck Co.
General Motors Truck Co.
Republic Motor Truck Co.
Watson Wagon Co.
White Co., The.

Traffic Posts.
Buffalo Municipal Equipment Co.
George Cutter Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.

Traffic Regulation Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.

Trailers.
Buffalo Springfield Roller Co.
Watson Wagon Co.

Tree and Flower Bed Guards.
Wright Wire Co.

Trench Braces.
Bond Co., Harold L.
James B. Clow & Sons.

Trench Pumps.
Bond Co., Harold L.
Deming Co.
Worthington Pump & Mach. Co.

Turbines.
Allis Chalmers Mfg. Co.

Typewriters.
Noiseless Typewriter Co.

Vacuum Pumps.
Deming Co.
Worthington Pump & Mach. Corp.

Valves.
Chapman Valve Mfg. Co.
James B. Clow & Sons.
Coldwell-Wilcox Co.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Pratt & Cady Co., Inc.
Rensselaer Valve Co.
Simplex Valve & Meter Co.
Smith Co., A. P.
Wood & Co., R. D.

Valves, Air.
Kennedy Valve Mfg. Co.
Simplex Valve & Meter Co.

Valves, Altitude.
Simplex Valve & Meter Co.

Valve Boxes and Housings.
Clark Co., H. W.
James B. Clow & Sons.
Columbian Iron Works.
Eddy Valve Co.
Flower-Stephens Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Pratt & Cady Co., Inc.
Rensselaer Valve Co.
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Wood & Co., R. D.

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Watson Wagon Co.

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National Water Main Cleaning Co
Pitometer Co.

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Simplex Valve & Meter Co.
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NOTICE TO CONTRACTORS

Sealed proposals will be received by the Board of Commissioners of Jersey City, N. J., Tuesday, February 18, 1919, at 2 p. m., in the Assembly Chamber, City Hall, Jersey City. for the construction of a water main under the Hackensack and Passaic Rivers, in accordance with plans and specifications, and addenda thereto, on file in the office of the City Clerk of Jersey City, for public inspection.

Blank forms of bid, showing estimate of quantities and agreements of sureties, must be obtained at the office of the consulting engineer, Laurence A. Ball, Room 23, City Hall, Jersey City. A deposit of $25 must accompany each application for copy of plans and specifications, which deposit will be refunded when plans and specifications are rturned to the consulting engineer in good condition.

Proposals must be enclosed in sealed envelopes, endorsed "Proposal for Water Main Under Hackensack and Passaic Rivers," directed to this Board, and handed to the City Clerk in open meeting when called for in the order of business relating to sealed proposals.

The bonds required to be furnished on proposals (and a possible subsequent contract) are those of some surety company authorized to do business in the State of New Jersey.

The Board reserves the right to reject any or all proposals if it is considered for the best interests of the city so to do.

By order of the Board of Commissioners of Jersey City.

FRANK A. DOLAN,
City Clerk.

Dated, City Clerk's Office.
Jersey City, January 24, 1919.

Bids received until February 20, 1919.
ROAD IMPROVEMENTS
RUMSON, N. J.

Notice is hereby given that sealed bids will be received by the Mayor and Council of the Borough of Rumson for the permanent improvement of the Rumson Road, in the Borough of Rumson, County of Monmouth and State of New Jersey, with a bituminous surface upon a concreat foundation; estimated amount of surface pavement required is 29,175.55 square yards, of foundation, 5, 203.8 cubic yards; and opened and read in public at a meeting of the said Mayor and Council to be held at the Council Chambers in the Oceanic fire engine house on Thursday, February 20, 1919, at 8 p. m.

Drawing and specifications and forms of bids, contract and bond for the proposed work, prepared by George K. Allen, engineer, and approved by the State Highway Commission, have been filed in the office of the said engineer, at No. 60 Broad Street, Red Bank, Monmouth County, New Jersey, and of said Commission at the State House, Trenton, N. J., and may be inspected by prospective bidders during business hours. Bidders will be furnished with a copy of specifications and blue prints of the drawings by the engineer on proper notice and payment of cost of preparation. Bids must be made on the standard proposal forms in the manner designated therein, and required by the specifications, must be enclosed in sealed envelopes bearing the name and address of the bidder on the outside, addressed to Daniel A. Naughton, Borough Clerk, Rumsen, New Jersey, and must be accompanied by a certified check or cash for not less than $1,000, payable to the Collector of the Borough of Rurson, and be delivered at the place and on the hour above named. The standard proposal form is attached to the specifications, copies of which will be furnished on application to the engineer.

All bids must be accompanied by a communication in writing from a surety company authorized to do business under the laws of the State of New Jersey, that it is willing, ready and able to act as surety on the bonds of the bidder in question, to the amount set forth in the specifications.

By order of the Mayor and Council of the Borough of Rumson.

DANIEL A. NAUGHTON,
Clerk.

Bids received until February 17, 1919.
ROAD WORK
PHILIPPI, W. VA.

Sealed proposals for the construction of the following roads addressed to the County Court at Barbour County, West Virginia, and endorsed "Proposal for Construction of Class A Road in Barbour County," will be received by the said Court at the office of the Clerk of said Court in Philippi, W. Va., until 1 p. m. on the 17th day of February, 1919.

The Fairmount and Beverly Turnpike—Federal Aid Project No. 16—Bituminous macadam: 14 ft. wide, 3.2 miles.

The Junior Road—Bituminous macadam, 14 ft. wide, 2.85 miles.

Plans and specifications may be seen at the office of the said County Clerk and at the office of the State Road Commission, Charleston, W. Vo.

Proposals shall be submitted upon the blank forms to be provided by the undersigned and shall be accompanied by a certified check for at least 5 per cent of the total amount bid.

The right is recerved to reject any or all bids.

S. F. HOFFMAN,
Clerk of the Barbour County Court,
Philippi, W. Va.

Bids received until February 20, 1919.
ROAD IMPROVEMENTS
HAMLIN, W. VA.

Sealed proposals will be received by the County Court of Lincoln County, at Hamlin, West Virginia, until 12 o'clock noon, February 20th, 1919, for the improvement of the following roads:

1. Hard surfacing of a portion of the Hamlin-West Hamlin road, beginning at the upper school househ on Two Mile Creek or Station 196, plus 50 and extending to the east end of the West Hamlin bridge or Station 292 plus 93. Width 14 feet.

2. Hard surfacing of a po the Hamlin-Griffithsville road, ning at the intersection of M Lynn Strets in the town of or Station 0 plus 00 and e toward Griffithsville 6½ mile Station 343 plus 20. Width 1

3. Hard surfacing of a portio Mud River Road, beginning at tersection of the Hamlin-wes in Road or 0 plus 00 and exte main Mud River three miles Station 159 plus 40. Width 14

4. Grading of a portion of Mud River road, beginning at of Adkins & Adkins contract tending to the east end of the Brdge, approximaely three mi

5. Grading a portion of the Fork Road, beginning at the National Bank, in the town fithsville, or at Station 0 plus extending up Valey Fork, a dis three mies or to Station 158 p

6. Grading of a portion Alum Creek-Griffithsville Road, ning at the south end of th Creek bridge over Coal River, Station 0 plus 00 and exten Fuquays Creek a distance miles or to Station 211 plus 20.

7. Grading of a portion of th lin-Huntington Road, beginning intersection of the Hamlin-Wes lin road near West Hamlin or tion 0 plus 00 and extending Huntington to the intersection Lincoln?Cabell Cohnty line, a of 3 miles or to Station 158 pl

8. Grading of a portion of the River Road, beginning at the tion of the Hager & Hager ron the mouth of Ten Mile Creek tending to Ranger, approximate miles.

Plans and sperifications can in the office of T. J. Bartrug neer, Hamlin, W. Va.

Check of $100.00 per mile o ing will be required as a guara good faith; $500 per mile surface.

All bids to be made on forms furnished T. J. Bartug neer.

The County Court reserves t to reject any and all bids.

ALBERT F. BLA
Clerk County Court Lincoln, Virginia.

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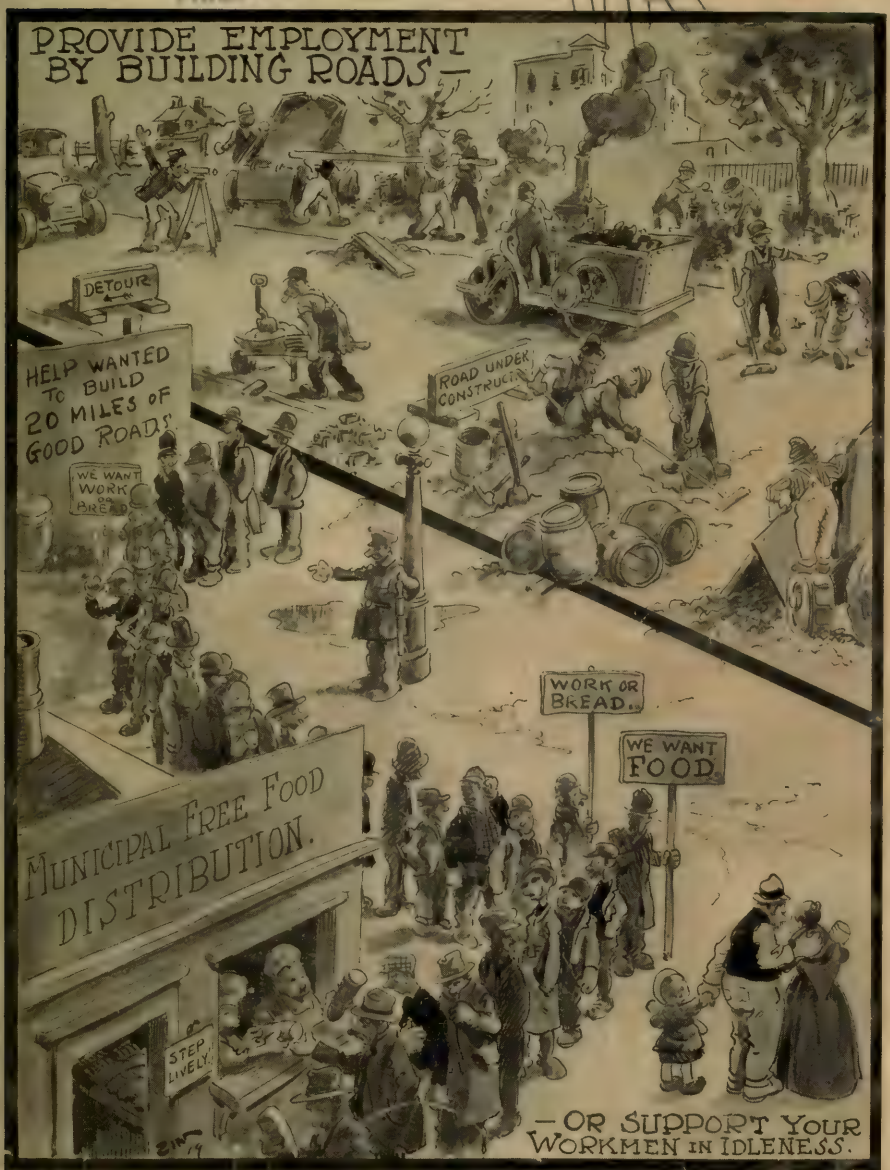
March, 1919

Vol. XX No. 3

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The American City

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Entered as second class matter, September 11, 1914, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Published monthly by The Civic Press, Tribune Building, New York.





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For street lighting, the advantages of a single high candle-power G-E Novalux (incandescent) fixture over clusters of two or more lamps of comparatively low candle power is easily seen.

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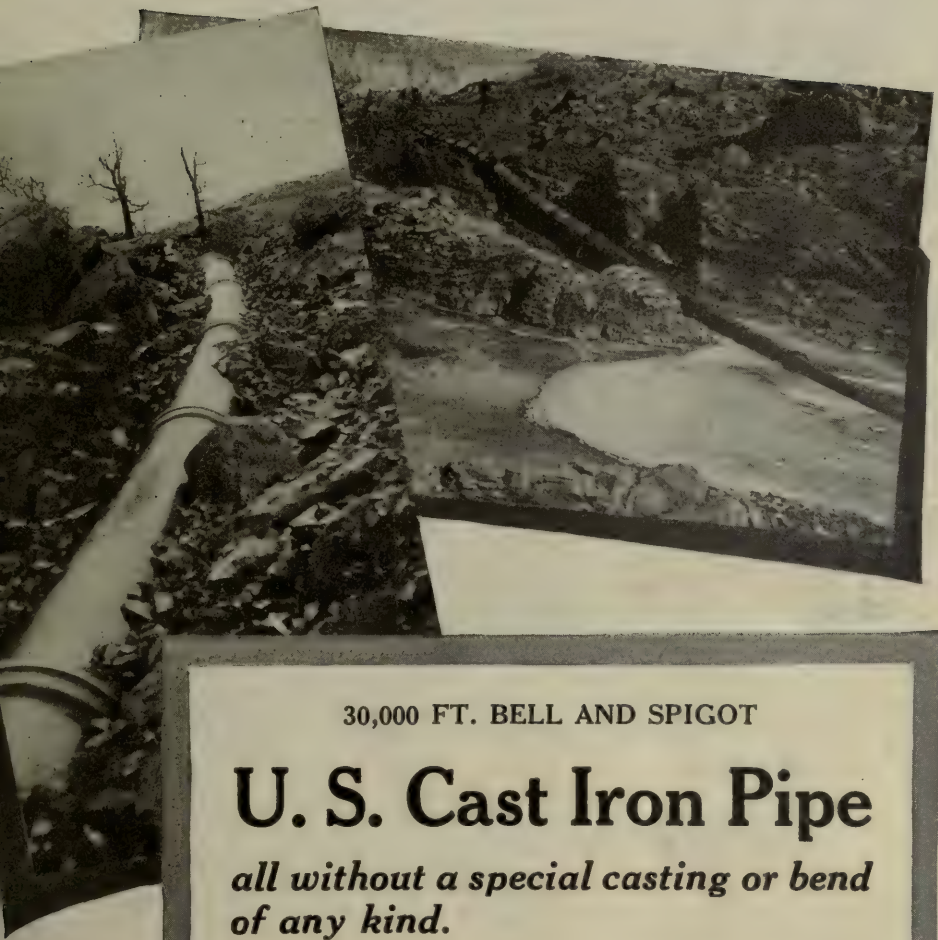
Also, with single lamp fixtures, there is obviously less globe breakage and less expenditure of labor in cleaning. The saving on these items is practically in direct proportion to the reduction in the number of lamps in each unit.

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U. S. Cast Iron Pipe

all without a special casting or bend of any kind.

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Manufacturers, engineers and others doing business with municipalities are invited to submit catalogs or circulars suitable for mention in these columns. THE AMERICAN CITY should always be mentioned when writing for this material. Officials who check over these items each month and write for such printed matter as interests them will find this a convenient way of keeping their information files up to date.

A Fire Car Designed for Small Towns.

The Sundry Sales Department of the American-La France Fire Engine Company, Inc., Elmira, N. Y., is issuing literature describing the American-La France fire apparatus on Ford chassis, a fire car to meet the requirements of any small town or village. These cars are said to afford maximum fire protection at the minimum cost to any small community. Literature and details sent upon request.

How Often Are Your Sewers Cleaned?

The interesting photographs in the folder on "The Turbine System of Sewer Cleaning," issued by the Turbine Sewer-Machine Company, 197 Eleventh Street, Milwaukee, Wis., explain the necessity for this method of cleaning sewers better than any descriptive text could. They reveal the causes of sewer clogging brought to light by the thoro work of the Turbine sewer-cleaning machines, and give some idea of the increase in pipe capacity that is brought about by the cleaning. Other illustrations show how the machine is operated, and explain its working parts. If your sewers have not been cleaned recently, this folder will prove of special importance to your city.

Modern Filter Equipment.

Water department officials or others interested in modern filter equipment will find it well worth while to write for *Shop and Field News*, a monthly publication of the Pittsburgh Filter Mfg. Co., Pittsburgh, Pa., which will be sent free on request.

Centrifugal Pumps, Geared Steam Turbines,

A large illustrated catalog relating to steam turbines, double-helical speed-reducing gears, turbo-generators, centrifugal blowers and compressors, and single and multi-stage centrifugal pumps will be sent upon request by the DeLaval Steam Turbine Co., Trenton, N. J.

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Write Zelnicker in St. Louis for Bulletin No. 259, giving a most complete list of dimensions and specifications of storage tanks, pressure tanks, tank car tanks, wooden tanks, air receivers, glass-enameled lined tanks, air compressors, boilers, wrought iron pipes, etc., of all kinds and sizes.

Chlorine Control Apparatus for Water and Sewage Purification.

Wallace & Tiernan Co., Inc., 349 Broadway, New York City, is distributing an attractive large catalog containing descriptive matter concerning its many new types of equipment for handling liquid chlorine for the sterilization of water and sewage. Many full-page photographs and explanatory diagrams are included, also a list of cities using the "W & T" apparatus and a discussion of the superior qualities of liquid chlorine as compared with other chlorine compounds.

Dart-Northern Fire Trucks.

The Dart Motor Truck Co., Waterloo, Iowa, provides the chassis for Northern equipment for hook and ladder wagons, city service trucks and triple combinations. A four-page circular issued by the company includes photographs of Type "H" Northern equipment mounted on Dart motor chassis and specifications of Northern equipment, and pertinent facts about speed and safety, weight and power as relating to the subject of motor fire apparatus.

Up-to-Date Methods of Street Cleaning

are described in the illustrated catalog of The Wagon Company, Tiffin, Ohio. The Tiffin two-mot tem flushers are said to be giving a superior serv many of America's most progressive cities.

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The two outstanding features of the large new cata The Kelly-Springfield Motor Truck Company, Sprit Ohio, are the large number of drawings of motor parts and the numerous photographs which illustra versatility of the Kelly-Springfield trucks.

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The Republic Motor Truck Co., Inc., Alma, Mic the "largest builder of motor trucks in the world, of its past and present achievements in the product internal gear drive "Yellow Chassis" motor trucks booklet of the title given above. Illustrations and fications of five models are included. A smaller l also issued by the company gives illustrations a scriptions of seven models, designed for light, mediu heavy hauling, ranging in maximum capacity from to 10,000 pounds.

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"The Road of Last Repairs."

This is the title of a pamphlet published by the N Brick Manufacturers Association, Engineers' Bu Cleveland, Ohio, emphasizing the numerous great tages of a first-class vitrified brick highway and inc many attractive illustrations of dependable brick roa and the method in which they are built.

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"Bitoslag," an improved asphaltic concrete pav which is said to sustain successfully the heaviest tra described in a circular which will be mailed at yo quest by the Bitoslag Paving Co., 90 West Street York. The circular contains attractive illustratio city and county roads paved with "Bitoslag."

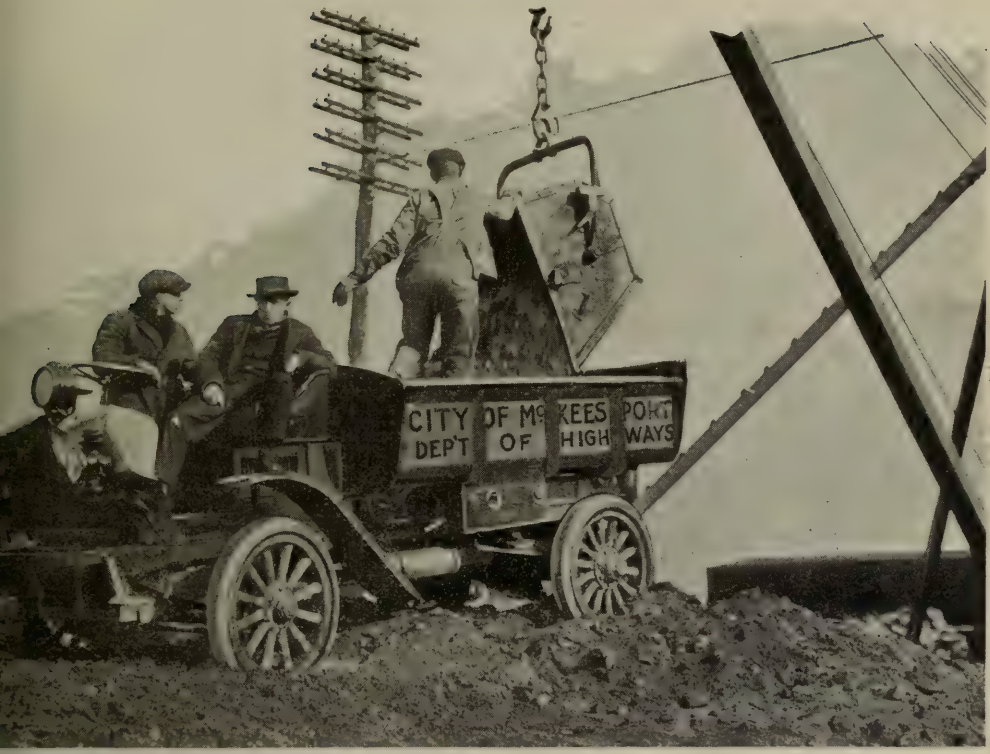
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(*Continued on page 6*)



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Write to Department B for catalog listing many of the 7000 concerns that use the Autocar.

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Ardmore, Pa. **Established 1897**

Autocar

Valuable illustrated material, catalogs, statistics, etc., as mentioned below, relative to methods, materials and appliances for public improvement work, will be sent free of charge if you mention THE AMERICAN CITY.

Digging and Loading Machines.

There are many municipal and county operations, such as street and road building, ash handling, etc., in connection with which a digging and loading machine would save labor, time and money. A catalog showing such machines will be sent on request by The Geo. Haiss Mfg. Co., 143d Street and Rider Ave., New York City.

The Importance of Stone Spreaders.

Crushed stone used for paving and road-building work cannot be spread to the best advantage unless a special stone spreader of some sort is used. The Burch stone spreader, especially designed for municipal and county service, is described in the circular of the Burch Plow Works Company, Dept. C, Crestline, Ohio.

Inexpensive Concrete Mixers

are described in Bulletin 47 of the Northwestern Steel & Iron Works, Eau Claire, Wis. These mixers are suitable for sidewalks, curb, gutter and road work, and are low in price because simple in construction.

Are You Thinking About Summer's Dust?

If so, you will be interested in the printed matter of The Dustoline for Roads Company, Summit, N. J., relative to its odorless and stainless liquid, which is not only effective for laying dust but also has the advantage of being without any of the objectionable features of the asphalt or tar preparations.

The Complete Road-Building Catalog.

The Good Roads Machinery Co., Kennett Square, Pa., has issued what is considered to be the most complete catalog of road-building machinery yet published, which the company will send on request to anyone interested in the subject of road-building equipment.

Asphalt Street Repairs.

The Lutz surface heater described in the catalog of the Equitable Asphalt Maintenance Company, 1901 Campbell Street, Kansas City, Mo., softens asphalt and other bituminous pavements, enabling the street department to vulcanize the old and new material in a way which makes resurfacing and maintenance easy and inexpensive.

Curb Bars.

How are you protecting your concrete curbs against breakage? The Kahn curb bars described in the cataiog of The Truscon Steel Company, Youngstown, Ohio, provide an economical method of protecting and reinforcing concrete curbing, both for business and residential streets.

Asphalt and Road Oils.

The Asphalt Sales Department of the Texas Company, 17 Battery Place, New York City, is now in position to quote prices and make shipments of Texaco asphalt, road oils and binders, and will send on request illustrated printed matter and price list to any one interested in paving and road-building construction and maintenance. The Texas Company carries a stock of asphalt and road oils in all parts of the country ready for shipment.

Motor Trucks for Street Flushing and Road Work

are described in the catalog of the Denby Motor Truck Company, Detroit, Mich. The Denby line includes internal gear trucks from one- to five-ton capacity.

Trolley Car Street Sprinklers and Flushers

are manufactured by the American Car Sprinkler Company, Worcester, Mass., which will send photographs and full information to cities that would like to know the most effective method of sprinkling and cleaning s on which car tracks are laid.

Motor Truck Literature.

A large amount of motor truck literature has re been prepared for distribution by the Acme Motor Company, 434 Mitchell Street, Cadillac, Mich. S circulars are devoted to special types of trucks for t lowing uses: coal delivery, oil tank hauling, heavy f hauling and dump truck service, and inter-city ha

A 64-page catalog entitled "Pointers to Profits" co photographs, drawings and specifications of Acme for many different uses. Any or all of this materi be sent free on request.

Trucks for Every Service.

A large and attractive catalog recently prepared by t diana Truck Corporation, Marion, Indiana, contain tographs of all shapes and sizes of trucks, for flushing, hauling road material, etc.; also specificati models of 1, 1½, 2, 3½ and 5-ton capacity.

Rust-proof Wire Fences and Tree Guards

If you are interested in wire fencing, tree guards, bed guards, etc., for playgrounds, school grounds or public or private enclosures, Illustrated Catalog G, by the Wright Wire Co., Worcester, Mass., will pr practical help.

Pavements That Pay for Thenselves.

Progressive communities that have exchanged the d ties of hauling on earth roads for the comforts of over improved highways have found that the sav operating expenses for only a brief period is ficient to pay the full cost of the concrete p A four-page circular, issued by the Portland C Association, Chicago, Ill., contains photographs and tics of comparison between earth and concrete ro the number of miles per gallon of gasoline. This ci will be sent free on request.

Soldiers Memorials.

An illustrated folder has been published by the I City Ornamental Iron Company, Department M, M apolis, Minn., illustrating and describing honor rol solid bronze memorials of many pleasing varieties. municipal and county monuments in granite and b

Motor Driven Centrifugal Pumps.

If you have not already investigated the reduction penses and the increased efficiency made possible b type of pump, you will find it well worth while t for Bulletin 1632-C. A. issued by the Allis Chalmers pany, Milwaukee, Wis. If you will state the con of your pump service the Allis Chalmers engineer submit suggestions and make recommendations w any expense on your part.

A Solution for Calculating Problems.

If there is much figuring work in your office, such tistics and reports, engineering formulæ, etc., the of this work can be handled accurately and quic explained in the catalog of the Monroe Calculatin chine Company, Woolworth Building, New York, catalog will be sent to any one mentioning THE ICAN CITY.

Bitoslag Pavement—What It Is.

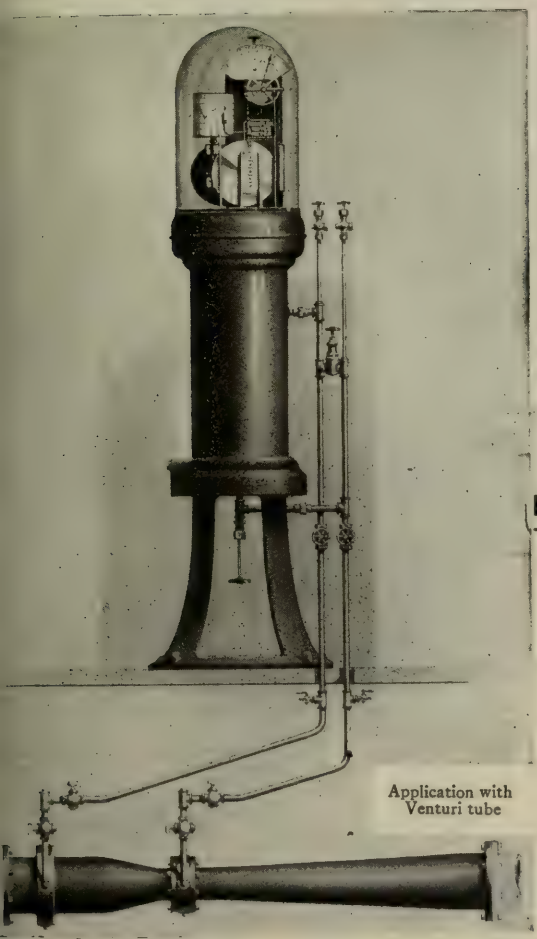
An illustrated circular has been prepared by the B Paving Company, 90 West Street, New York, show lustrations and giving construction details of an im type of paving combining many attractive featur country roads as well as city streets.

SITUATION WANTED

Civic—Commercial Secretary and Research Worker

U. S. Army man, a University, School of Philanthropy and Bureau of Municipal Research graduate trained in economics and business management; experienced in organizing, publicity, investigation an executive work in industry, commerce, recreations, charities, employes' welfare, cooperative movements an general social, commercial, civic betterment programs; at present in the military service on special duty a community organization executive; is available for immediate executive, research or organizing work wit civic or social service organization, Chamber of Commerce, Bureau of Municipal Research, etc.

Address Box 65, care of THE AMERICAN CITY.



Application with Venturi tube

LEAKS COST MONEY

Do you know your water consumption? Can you tell *accurately* just how much water leaves your reservoir every day? Unless you can answer these questions satisfactorily you can't tell how much money you are losing on account of pipe joints, fixtures, etc.

The SIMPLEX METER REGISTER will give you an accurate, dependable record of all the water passing through the pipes.

Simple, accurate and convenient to read.

Practically frictionless in operation. A patented specially shaped float resting on mercury rises and falls in exact proportion to the rate of flow. The movement is transmitted directly to the pen arm without intervening gears, levers, links, etc., to cause friction or lost motion.

This sensitive action responds quickly to the smallest increments in the rate of flow and consequently enables the use of a Venturi tube with the largest permissible throat.

This means decreased friction and reduced pumping cost.

This is why SIMPLEX METERS are so popular among engineers intimately familiar with Venturi practice.

We are also headquarters for Rate Controllers, Filter Gauges, Weir Registers, Pitot Tube Recorders for water waste surveys and other waterwork specialties.

Write for copy of bulletin giving full details.

SIMPLEX VALVE & METER COMPANY

112 North Broad Street, Philadelphia, Pa.

Representatives: Mr. Geo. W. Stetson, 141 Milk St., Boston, Mass.; Hankin & Co., Montreal, Toronto, Vancouver; Water Works Supply Co., San Francisco, Cal.; C. J. Justice, Lytton Bldg., Chicago; A. MacLachlan, Rockefeller Bldg., Cleveland; Chas. McIntosh, Dime Bank Bldg., Detroit, Mich.

Also Manufacturers of Controlling Altitude Valves for Reservoir, Standpipes; Rate of Flow Controllers Loss of Head and Rate of Flow Gauges for Filters; Automatic Air Valves.

There is no necessity for what happened here







PREVENT THIS WITH



CAREY Elastite EXPANSION JOINT

NAME REG. U.S. Patent Office

IF THERE had been Carey Elastite joints in this street this buckling would not have occurred.

It would have been impossible because Elastite joints, unlike poured joints, are uniform in thickness. Hence it is not possible when using Elastite to accidentally leave a place in the paving where expansion space is insufficient.

Elastite comes to the job in strips of any desired dimensions.

Elastite joints are water-tight at ALL times. Made of tempered asphalt compound sandwiched between two layers of asphalt saturated felt, they adhere to the paving material year after year in all temperatures. Frost has *no chance* to get in and cause trouble.

Elastite remains ELASTIC, providing protection as long as the street itself endures. It is used in wood, brick, granite, and concrete streets in nearly every first-class city.

For particulars, write

THE PHILIP CAREY COMPANY

8 Wayne Avenue Lockland, Cincinnati, Ohio



THE New York City Fire Department is confronted by a tremendous responsibility. It has more property to protect than any other fire department in the world.

There has been constant study on the part of those in authority to increase its efficiency.

We are proud of the American-LaFrance record of performance in New York's fire department history for this company has furnished the majority of the essential fire fighting apparatus during the past seven years.

In 1912 twenty-five tractor drawn aerial trucks were built by us; in 1917 twenty-five more pumpers were furnished, and fifteen more pumpers are now building at our factory.

This makes a total of sixty-five pieces of American-LaFrance motor fire apparatus in the New York Department.

IT IS POSITIVE TESTIMONY THAT

NOTHING TALKS LIKE ACTUAL PERFORMANCE

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC

ELMIRA, NEW YORK, U. S. A.

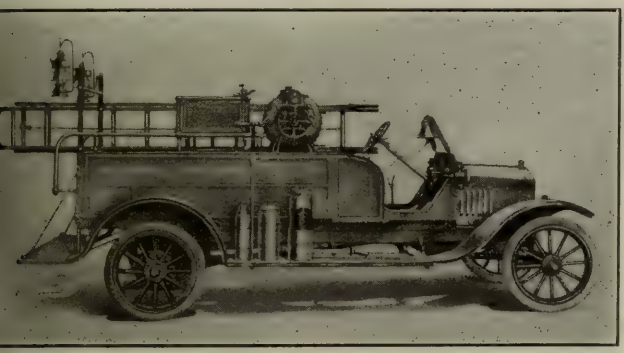
New York Boston | Pittsburg Chicago | San Francisco Philadelphia | Atlanta Denver | Portland, Ore. Los Angeles | Dallas Washing

CANADIAN FACTORY

American-LaFrance Fire Engine Co., of Canada, Ltd., Toronto, Ont.

AMERICAN-LAFRANCE FIRE APPARATUS ON FORD CHASSIS

ire Car to Meet the Requirements of Any Small Town or Village



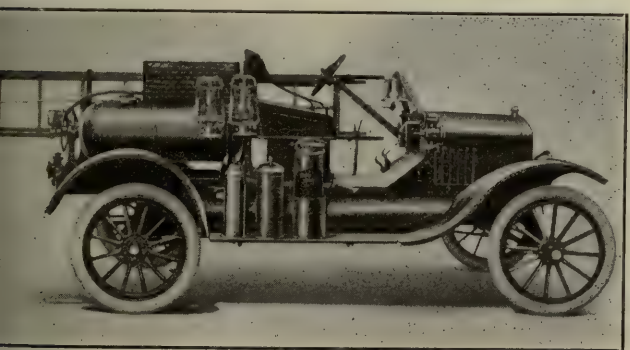
ican-LaFrance Combination Hose & Chemical Car On Ford One Ton Chassis.

Designed for the small towns and villages equipped with water pressure system. It is equipped with a hose body for 1,000 ft. 2½" fire hose—1 40-gal. Champion Chemical Tank, 1 20-ft. Extension Ladder, 1 12-ft. Roof Ladder, 2 Babcock Fire Department Extinguishers, Axe, Crowbar, etc. **Over 50 already in service.**

esigned to meet the exg fire conditions in any town and village which uipped with, or without, r pressure system. Al- a complete fire depart- in itself. It is equipped 2 35-gal. Chemical s arranged to throw a nuous chemical stream, 1 Extension Ladder, 1 Roof Ladder, 2 Bab- Fire Department Exishers, Axe, Crowbar, necessary indispensable ghting tools.



American-LaFrance Double Tank Chemical Car on Ford One Ton Chassis.



ican-LaFrance Double Tank Chemical on Ford Touring Chassis.

One of the most popular fire cars among the small towns and villages. Except for the size of chassis and a few changes in equipment, this car is practically the same as the one above.

Over 240 already in service.

These cars afford maximum fire protection at the lowest possible cost to any small community. **Literature and details sent upon request.**

SUNDRY SALES DEPARTMENT

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

Elmira, New York, U. S. A.



Do you like this——

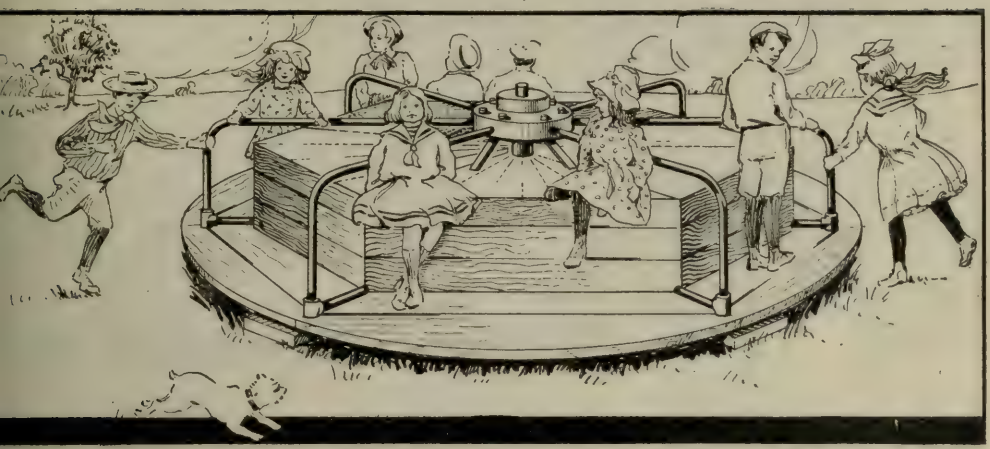
It is conditions such as pictured above which bring forth comments like that of Winston Churchill in the January issue of THE AMERICAN CITY from which we quote as follows:

Recreation Facilities Essential

Of no less importance is the program for adequate playgrounds and parks, and community centers for children as well as for adults. Education is indeed the corner-stone of democracy, but education is of no avail to a feeble mind or a stunted brain, and a sound body is the first requisite of good citizenship. That the city streets as playgrounds breed disease and vice and crime is a truth needing no comment. The benefit accruing from the playgrounds already in existence must be apparent to all thoughtful citizens, and that the child of the well-to-do alone should have good air and sunlight in which to exercise and grow presupposes a continuance of the narrower view of community prosperity, of a wealth domination, economic and political, that for the future good of the social body and soul cannot be permitted to continue. And for those who cannot afford country homes, the city must provide a recreation park such as that suggested by the Commission.

EVERWEAR MFG. CO. SPRINGFIELD, OHIO

EVERWEAR
STANDS WEAR AND TEAR



r do you prefer this?

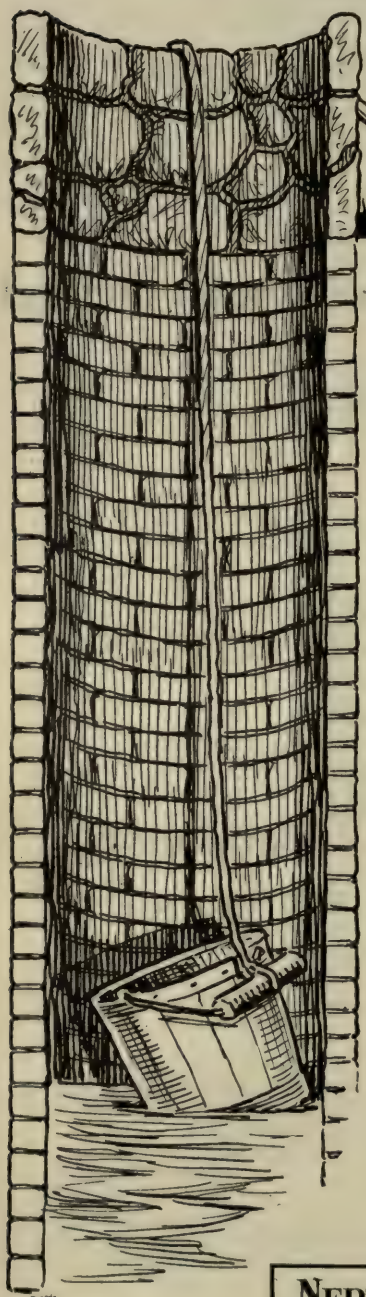
No one needs to be told that playing in the streets is dangerous. The increasing use of heavy motor trucks as well as the lighter and swifter moving passenger vehicles makes street play a hazardous pastime.

If you are interested in keeping children off the streets, send us your address for our free literature on playground work including illustrations and descriptions of the sort of apparatus which the kiddies like the best. Everwear Playground Equipment is used all over the country because it is both safe and durable, two prime requisites where children are concerned.

EVERWEAR MFG. CO. **SPRINGFIELD, OHIO**

EVERWEAR
STANDS WEAR AND TEAR

ONE OF THE FAVORITE PHRASES



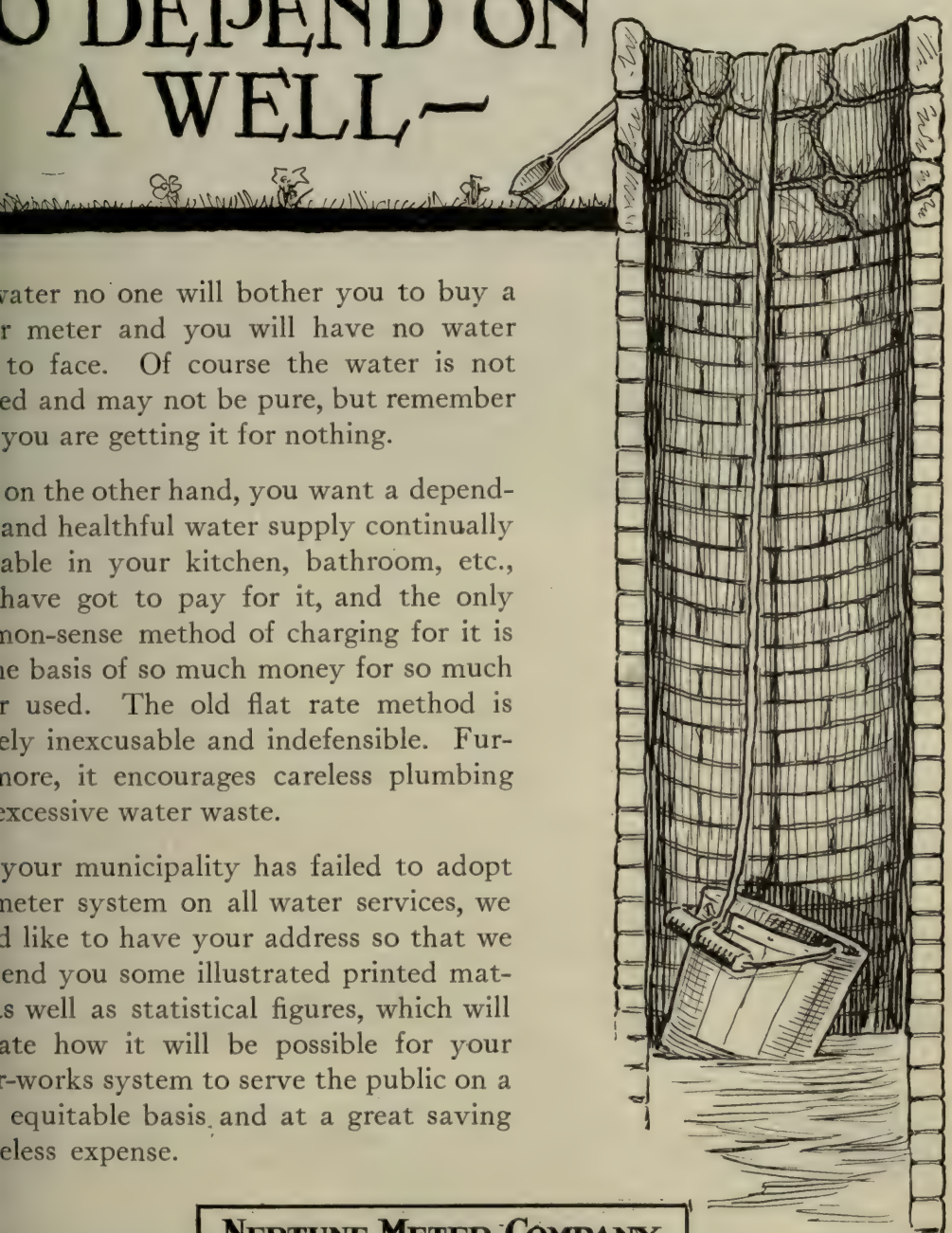
which is made use of by city official others in defense of their failure to water meters is that "water ought to free as air."

Well, so it is,—under certain cond and circumstances. You can go ahea draw water out of your well as often a have a mind to and as long as the wel not dry up. Of course, it will require exertion to haul up the water, but er like water, costs nothing under c conditions.

However, just as soon as you beg *harness* energy or furnish a guara supply of water thru a pipe, you enco certain fixed charges which have to be There is no more reason for saying water should be as free as air than th for saying that the power houses at Ni Falls should charge nothing for the elec energy furnished just because the Ni River does not charge anybody any for the water that runs over the falls.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter

F YOU ARE WILLING O DEPEND ON A WELL,—



vater no one will bother you to buy a r meter and you will have no water to face. Of course the water is not ed and may not be pure, but remember you are getting it for nothing.

on the other hand, you want a depend- and healthful water supply continually able in your kitchen, bathroom, etc., have got to pay for it, and the only mon-sense method of charging for it is ne basis of so much money for so much r used. The old flat rate method is ely inexcusable and indefensible. Fur- more, it encourages careless plumbing excessive water waste.

your municipality has failed to adopt meter system on all water services, we d like to have your address so that we end you some illustrated printed mat- s well as statistical figures, which will ate how it will be possible for your r-works system to serve the public on a equitable basis and at a great saving eless expense.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter

Washington's initia

CAST IR

has been a silent witne













Many and weighty have been the problems of State faced by our Presidents during the past sixty years.

Thrice during that period has war's grim spectre stalked through the Capitol's halls and corridors, threatening Democracy from within and without, while in his House at the other end of the Avenue the Nation's head has, with deep concern, yet perfect confidence, awaited the outcome.

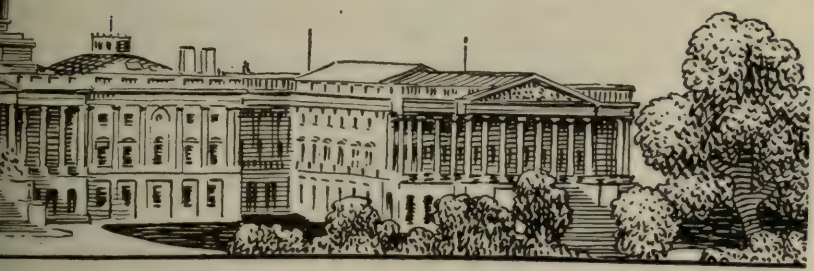
And the world has long since learned that where the question of Democracy is involved, the position of America is ever fixed and certain.

The Cast Iron Pi

1 Broadwa



nstallation of
ON PIPE
15 inaugurations



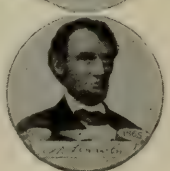












Prior to 1857 the problems of water supply and sanitation faced by the officials of our Capitol City were great and pressing.

During that year several miles of cast iron pipe were laid. This mileage has been gradually increased until the water and gas supply is now carried through more than one thousand miles.

The city's heads learned from that first installation what an eminent authority on aqueducts has so aptly said—"In cast iron you are dealing with a certainty."

blicity Bureau
y York City



HH HIGHWAY MATERIALS ROBERTSON BUI PRO

FORMERLY ASBESTOS PROTECTED METAL

Good Roads Made Better with Robertson Paving Joint

Not only ***made better*** but ***kept better*** is the result that Road Builders can expect from this ***all asphalt 100% efficient*** paving joint.

There are two important reasons:

To be 100% efficient a paving joint must be capable of contraction through its entire body. It must be capable of adjusting itself to the maximum of pavement pressure.

To be 100% efficient a paving joint must be capable of expansion through its entire body. It must be a true water-and-moisture retardent. It must have such adhesive and elastic qualities that give it the ability to form a permanent bond between the pavement sections.

The Robertson Paving Joint meets these qualifications because it is an All Asphalt Joint every atom of which is capable of expanding or contracting with variable weather conditions. It meets these constantly changing conditions by fully maintaining its qualities of adhesiveness, ductility and elasticity. It is 100% efficient.

The Robertson Paving Joint is premoulded in various standard sizes. Samples will be gladly sent upon receipt of request, together with tables of sizes, prices, etc.

H. H. ROBERTSON COMPANY
Formerly Asbestos Protected Metal Company
Highway Materials Department
First National Bank Bldg. Pittsburgh, Pa.



HH GHWAY TERIALS ROBERTSON CO BUILDING PRODUCTS
ORMERLY ASBESTOS PROTECTED METAL CO.

Robertson Road Fabric

(*Welded*)

Another safeguard for the builder of Good Roads. Robertson Road Fabric is an electrically welded wire fabric for concrete reinforcement. It is made with all wires running at right angles and without loosely woven wire members of any kind. It gives real service from every ounce of steel. There is no excess material in its make-up.

Every part of every member exerts its full tension power in the concrete to prevent the cracking of the pavement.

Robertson Road Fabric has no rough, sharp edges to injure workmen and is built for easy and economical installation. The spacing of the longitudinal and transverse wires are varied to suit requirements and standard specifications. It can be made of all galvanized wire or with longitudinal wires plain and transverse wires galvanized as desired.

Robertson Road Fabric is made in several styles. It is furnished in FLAT SHEETS (bundled) in any length up to and including 30 ft. or in ROLLS of 200 ft. to 400 ft. Prices and detailed information gladly furnished upon request.

Robertson Road Fabric is manufactured and stocked in Pittsburgh.

H. H. ROBERTSON COMPANY
Formerly Asbestos Protected Metal Company
Highway Materials Department
First National Bank Bldg. Pittsburgh, Pa.



The Chlorination of SEWAGE

Where Sewage is discharged into waterways used for public water supplies it is essential that the Sewage be STERILIZED to prevent pathogenic bacteria polluting the water and causing disease.

LIQUID CHLORINE

is just as applicable in the treatment of Sewage as it is with water supplies

"W&T" APPARATUS

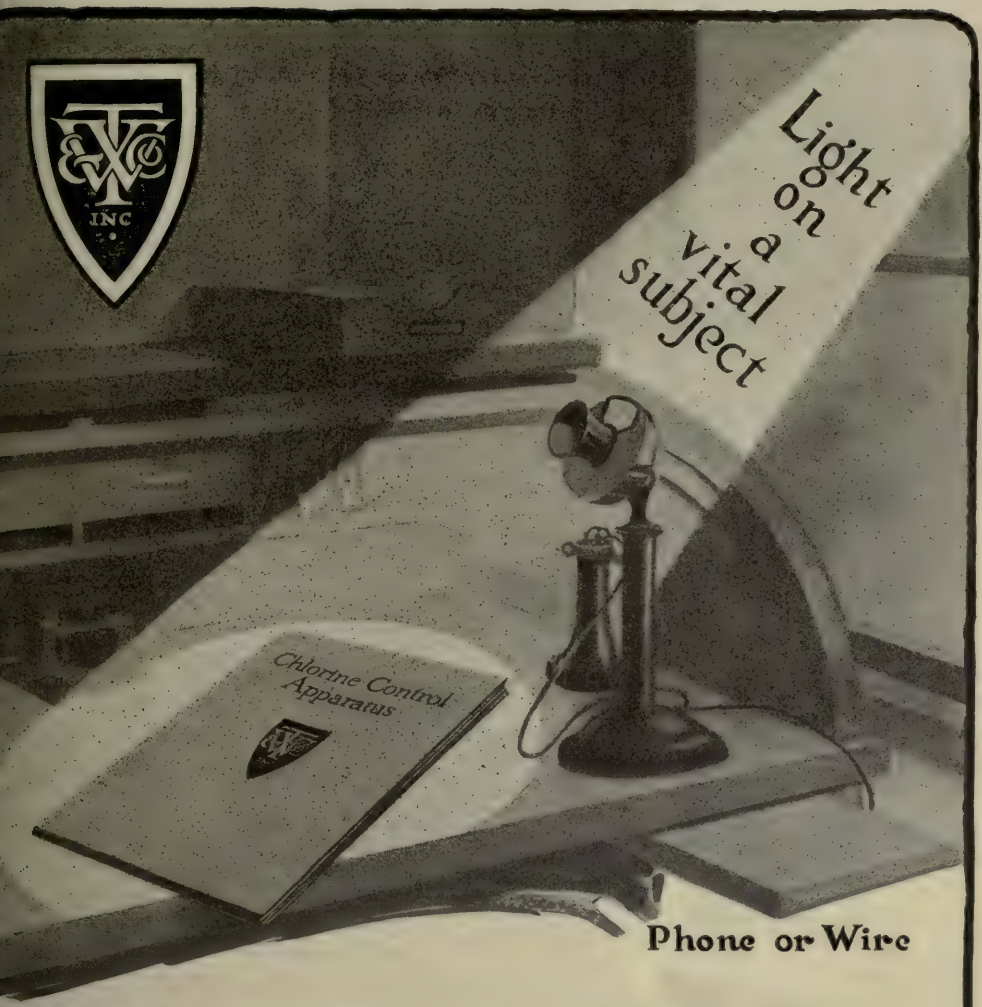
is widely used in the application of Liquid Chlorine to Sewage.

Special types of Equipment are available to automatically proportion the Chlorine to the flow of Sewage.

Let us send detailed information.

WALLACE & TIERNAN COMPANY, Inc.
NEW YORK CITY





Chlorine Control Apparatus

A SIXTY-FOUR PAGE BOOKLET

The Last Word on Water and Sewage Sterilization

USE COUPON TO SECURE COPY

WALLACE & TIERNAN CO., *Inc.* 349 Broadway, New York City

PLEASE send a free copy of your new sixty-four page booklet to

*Name*_____

*Street Number*_____ *City and State*_____

*Official Position*_____ *with*_____

A. C.

Chemicals for Water Purification

We manufacture highest grade of

Sulphate of Alumina

also

Chloride of Lime

Liquid Chlorine

PENNSYLVANIA SALT MFG. CO.

WIDENER BLDG. :: :: PHILADELPHIA, PA.

MATHIESON ALKALI WORKS, Inc.

Niagara Falls, N. Y.

Castner Electrolytic Process

Eagle-Thistle Brand

CHLORIDE OF LIME

In 200, 450 and 750-lb. drums Strongest, quickest-settling, most reliable.

LIQUID CHLORINE

Pure anhydrous, for use with any control apparatus. In improved and convenient cylinders, 105 and 150 lbs. net.

ARNOLD, HOFFMAN & CO., Inc.

Sole Agents

Boston Providence 61 Broadway New York Philadelphia Charlotte, N. C.

How They Do It In Other Places

Notify us their water conditions—information given by our engineers. Norwood Filters especially designed to meet their requirements and the problem is solved.

Write for Information

NORWOOD ENGINEERING COMPANY

FLORENCE MASS.

Liquid EBG Chlorine

OUR PLANT AT NIAGARA FALLS, NEW YORK covers more than ten acres and has been pronounced by Government Officials the most completely equipped and modern plant of its kind in the world. It has a capacity of 15,000,000 pounds of *Liquid Chlorine* a year—all 100 per cent. pure.

The extreme care taken in every department of manufacture together with the improved methods under which our product is made assures a quality of unvarying reliability. No foreign impurities to gum up your apparatus and put it out of commission.

Engineering experts everywhere endorse Liquid Chlorine as unqualifiedly superior to Hypochlorite (Chloride of Lime) for chlorinating purposes in the sterilization of water supplies and the disinfection of sewage.

Hundreds of cities and towns have shown their preference for E. B. G. Liquid Chlorine by adopting it exclusively.

We are prepared to meet your every requirement promptly and to the utmost satisfaction.

Send for booklet *The Wise Cities* and get fully posted.

ELECTRO BLEACHING GAS COMPANY

Pioneers and Leading Manufacturers of Liquid Chlorine

MAIN OFFICE: 18 EAST FORTY-FIRST STREET NEW YORK CITY

Chicago Office: 11 South La Salle Street

Canadian Representative

General Supply Company of Canada, Limited
Ottawa, Toronto, Montreal, Winnipeg
Vancouver



"plug that leak"

THE Cole Pitometer will help. It cuts out all avoidable and unnecessary waste and leaks. It keeps tabs on your water supply and gives an absolutely correct chart record of the amount of water pumped daily. By comparing this amount with the amount consumed you can readily see whether there is a wastage and just how much. The Cole Pitometer also shows whether your pumping machinery is keeping up to the mark.

Bear in mind that by reducing this waste, it is possible to dispense with a considerable amount of pumping, which means less steam, fuel and labor. Don't you think this saving worth while?

The Cole Pitometer is portable, accurate, sensitive and durable, and should be used in every station and on every gravity supply main.

Write for our booklet to-day.

The Pitometer Co.
55 Duane St. New York City

THE X-RAY FOR PUBLIC WATER SYSTEMS
TRADE MARK

GREAT WESTERN ELECTRO CHEM CO.
BUSH, BEACH & GENT
SOLE AGENTS
CARBON TETRACHLORIDE
POTASSIUM CHLORATE
BLEACHING POWDER
LIQUID CHLORINE
CAUSTIC SODA
SAN FRANCISCO, CAL.

A Contract is a Contract

Liquid Chlorine

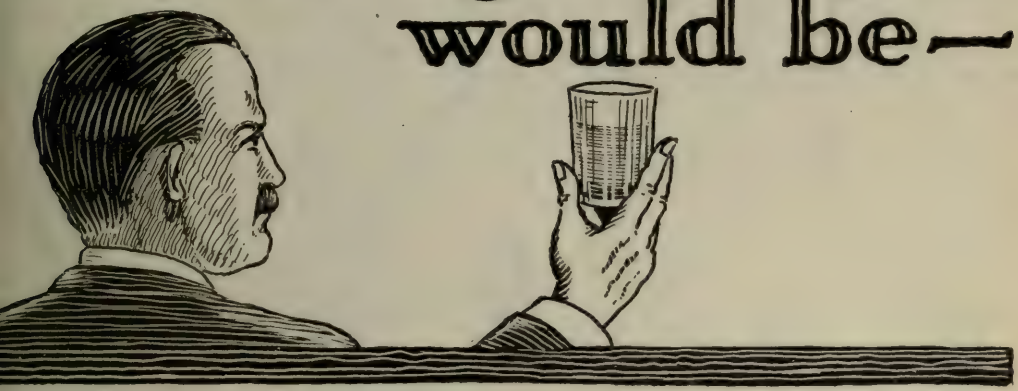
Soda Ash

Chloride of Lime

80 Maiden Lane
NEW YORK

Holbrook Building
SAN FRANCISCO

How indignant you would be—



if someone offered you a drink of water with a layer of dirt along the bottom of the glass.

YET YOU FAIL TO REALIZE

that the water main thru which your drinking water comes, unless properly cleansed may accumulate dirt and filth which will impregnate your drinking water with all sorts of impurities.

WHY YOUR MAINS NEED CLEANING

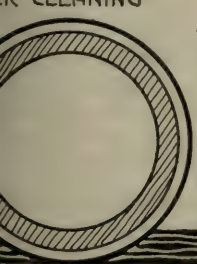
After a certain amount of service your water mains become more or less clogged or "choked up" with dirt and sediment. When in this condition, they retard the flow of water, which means poor pressure, which means annoyance all around as well as the possible crippling of your fire fighting efficiency. And bringing up the pressure under clogged conditions means more coal and more coal means—well you know what more coal means. Why don't you clean your mains and restore the normal unimpeded flow?

THE NATIONAL METHOD

will do this for you quickly and cheaply. Your mains are easily restored to normal service by proper cleansing. And it is so simple.

Write for detailed information. It shows how you can cut down your coal bills

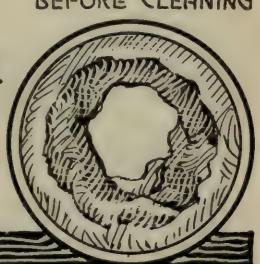
ER CLEANING



National Water Main Cleaning Company

HUDSON TERMINAL BUILDING
NEW YORK CITY

BEFORE CLEANING



Deming POWER PUMP for Municipal Need

A TYPICAL REPORT—"The Deming Triplex Pump installed at our San Pablo Station has been oper almost constantly for the past five years and has given excellent service. The cost of maintenance repairs has been practically nothing and it is still in excellent condition." Peoples Water Co., Oakland,

192-Page Power Pump Catalog sent to officials on request.

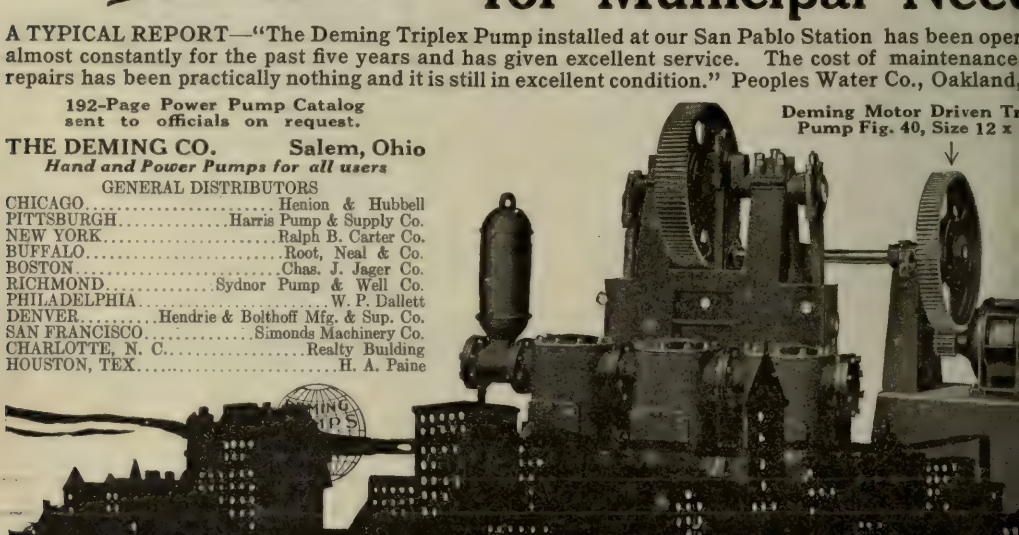
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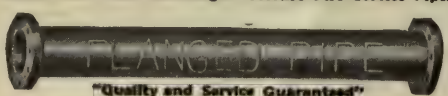
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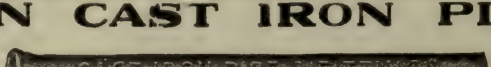
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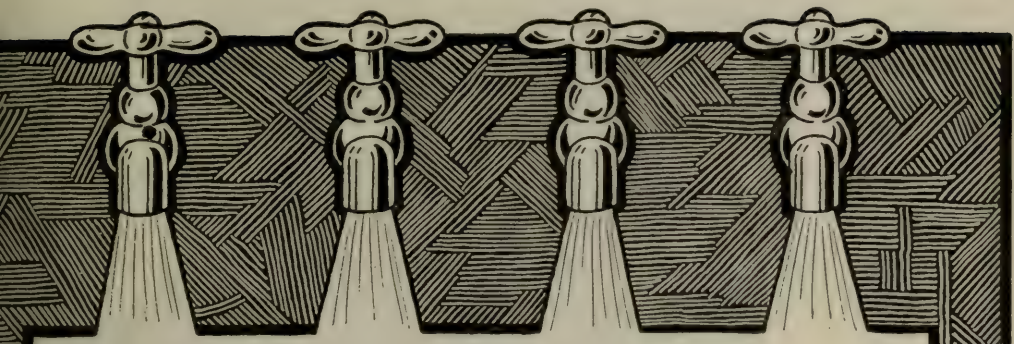


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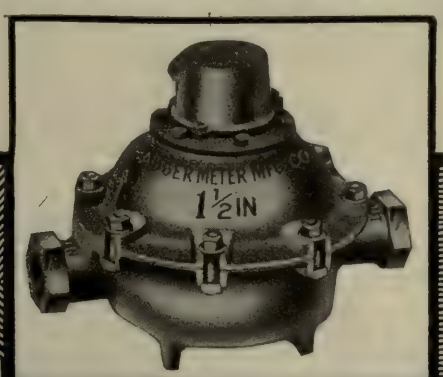
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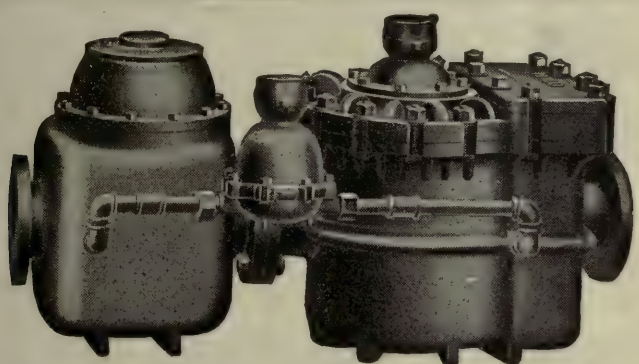
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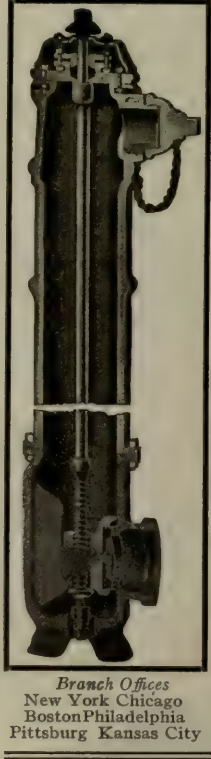
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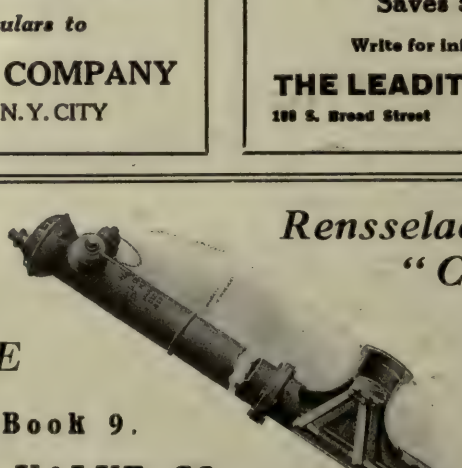
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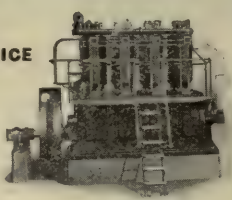
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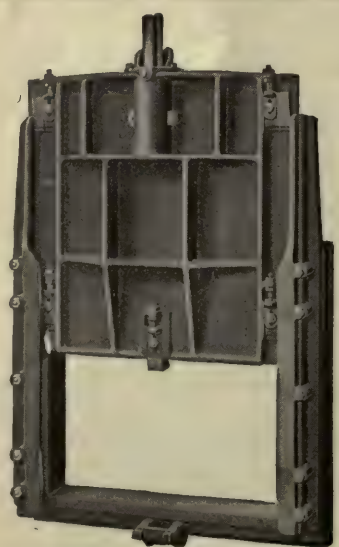
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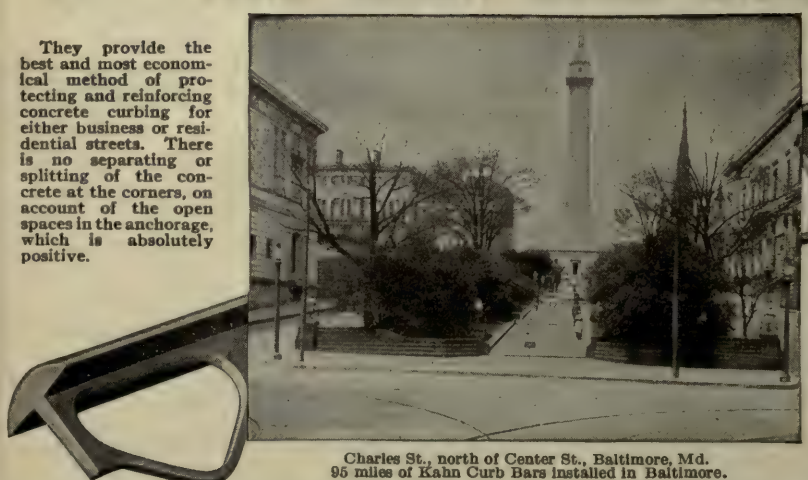
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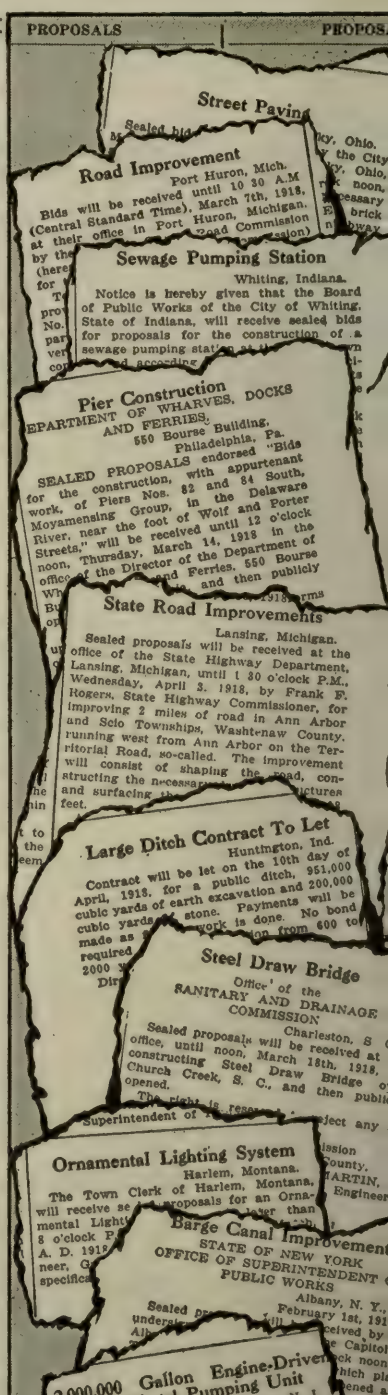
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MARCH, 1919

Volume XX
Number 3

Three Years of Patrol Maintenance

This Type of Road Maintenance a Great Success in Maine

By Paul D. Sargent
Chief Engineer, State Highway Commission

FOR the last three years all state and state-aid highways in Maine have been maintained by the State Highway Commission by the patrol method. The Commission both hires and pays the patrolmen and receives all reports. At the end of each season a report is submitted to each town showing exactly how its road taxes have been expended.

Selection of Patrolmen

When the patrol system of maintenance was extended to any town, the State Highway Commission first asked the municipal officers of the town to recommend three men who in their judgment would be able to handle the work and would be suitable for the duties. With this report the municipal officers included a brief statement of the man's age, height, weight, nationality, health and previous experience in road work, as well as the location of his residence with respect to the section of road which he might be called upon to patrol.

The supervisor from the State Commission then went to the town to interview the



THE TYPE OF LIGHT TRUCK USED IN MAINTENANCE WORK IN MAINE IN THE LAST THREE YEARS

men. Authority was given him to hire the man who seemed to be best fitted for the work. If, however, none of the men recommended by the town officials were found to be suitable for the work, it became the duty of the supervisor to hunt around until he found someone who was properly qualified.

Patrolmen's Reports

Early each spring detailed instructions are sent to each patrolman telling him in plain terms how best to handle the problems in his section. Thruout the season the patrolmen are visited every two or three weeks by one of the state supervisors. Weekly reports are forwarded by the patrolmen to the State Highway Department containing a statement of each day's work and the weather conditions prevailing. From these reports the supervisors, each of whom has charge of about twenty-five patrolmen, have been able to keep in touch with all the work. After the reports have been examined by the supervisor they are sent to the State Highway Commission office, where the Superintendent of Maintenance reviews them, makes any additional comment necessary and then places them on file.

In these weekly reports the patrolmen indicate the amount of time they have spent each day on the unimproved roads and the improved roads in their section. From this portion of the report it is possible to control the proportion of expenditure on the different classes of roads. Under the state laws, towns are obliged to pay each year $60 per mile towards the maintenance of state highways, providing that amount of money is necessary, and $30 per mile on improved state-aid roads. In the latter case the state pays the balance.

Wages of Patrolmen

In the monthly reports sent in by the patrolmen, the time they have spent on their various duties must agree with the weekly reports previously filed.

During the first year in which patrolmen were employed (1916) they were paid $55 per month. For this pay they were required to furnish one horse weighing not less than 1,200 pounds, a drop-axle wagon, the necessary hand tools and a one-horse drag. During 1917 and 1918 the patrolmen were allowed to use one, two or more horses, as needed. During the last season between one-third and one-half of t patrolmen were hired with two horses, a the men who regularly worked with o horse have been authorized to employ additional horse to do dragging. Duri 1918 a patrolman with one horse was pa 44 cents per hour, and a patrolman with tv horses 55 cents per hour. On account abnormal labor conditions and in order stabilize the patrol force, an agreement w made with each patrolman whereby t highway department withheld 5 per cent his wages each month, to be paid back him at the end of the season provided remained with the department thruout t entire season. In case a man was di charged for unsatisfactory work, he did n receive this 5 per cent. There were ve few resignations from the patrol force, a it was necessary to discharge very few me On September 1, 1918, the patrolmen's ra of pay was increased to 50 cents per ho for a man with one horse, and 60 cents p hour for a man with two horses.

Cost of Maintenance by Patrol System

During 1916, there were 373 patrolme employed to maintain 3,466 miles of roa The total expenditure for this work w $286,399, or an average expenditure $77.43 per mile.

The number of patrolmen employed w increased to 437 during 1917, and the nun ber of miles patrolled was increased 3,705. The expense of maintaining the roa was $432,716, making an average of $117. per mile, a figure somewhat higher tha that for 1916.

During 1918 the department employe 480 patrolmen to care for 4,235 miles road. The total appropriation for th work was $568,799, which increases th average cost per mile to $136. These i creased costs were due, of course, to the i creased cost of labor and material. Labo cost increased about 34 per cent over 191

There are approximately 100 miles state highway which are surface-treate each year with Tarvia B and sand. Th cost of preparing the road, making the su face application and maintaining it wit patches, and keeping the shoulders in co dition thruout the season, has averaged du ing the last three years from about $65 per mile in 1916 to $850 to $900 per mil for 1918.

Motor Trucks in Patrol Service

During the season of 1918 four one-ton ɔtor trucks were used in the patrol ser-ːc. Each of these four trucks replaced ɔm two to four horses used under the old ıeme. The saving effected may well be ɔreciated when it is understood that two, ee and four patrol sections were com-ed, and maintained by a truck driver and ɔ or three helpers. The longest section ler motor truck patrol maintenance was miles of bituminous macadam. There re also several sections of tar surface-ated gravel road cared for by the truck rol. Careful examination of these sec-ıs of road showed that they had been ter cared for last season when main-ıed by truck patrol than in previous rs, and it is planned to operate the cks another year. The only difficulty ountered was that the trucks were not vy enough to draw a drag in some in-ıces, and when it was necessary to drag shoulders teams had to be employed.

he following comparison of patrol main-ınce by trucks and by horses is valuable. 1917, on one section of state highway 55 ːs in length, four patrolmen were em-ved, each with one horse and more or extra help. The total cost for the ntenance of this road for horse and ı labor for patrol maintenance amounted ːıo,712 for the season. During the sea-of 1918 two Ford one-ton trucks were ːtituted. The cost of labor, including ating expenses of the two trucks and wing $2 per day as a depreciation charge each truck, amounted to $8,098. This vs a saving of about $2,500 in main-ing this 55 miles of road, with the addi-al advantage that the road was better cared for in 1918 than in previous years.

On a 34-mile section of state highway at another point, the total cost for labor and horses for 1917 was $4,392. During the last year the same road was maintained with one truck and three men at a cost of $2,705, including depreciation and maintenance of the truck. Thus, on this section of road a saving of almost $1,700 was effected.

On still another section of road 20 miles in length, two patrolmen, each with a horse, were employed in 1917 at a cost of $3,600, including extra help. This last year the same section was maintained with one truck and two men in addition to the foreman, at a total expense of $3,806 for truck and labor. This was the only section which showed an increase over the cost of maintaining with horses. In fairness to the patrolmen it must be noted that in this section was a piece of road 1.7 miles long which was not quite finished at the end of construction in the fall of 1917. The patrol gang finished the surface of the road, which needed considerable patching, dragging and regravelling. This road is, however, as has already been mentioned with respect to the other two roads, in far better general condition than it was a year ago.

From these data showing the cost of road maintenance with motor trucks as compared with the cost when horses are used, it will be seen that the work has been done generally at less expense and in a much more satisfactory manner. In addition to this it must be borne in mind that labor costs during 1918 were fully 30 per cent higher than in 1917.

EDITORIAL NOTE.—This article is prepared from a paper read at the Annual Meeting of the American Association of State Highway Officials.

Cut Hedges and Make Roads Safe

THE road laws of Missouri require that hedgerows shall be cut to a height not exceeding five feet. Road overs are directed to see that this work is ː. The shortage of farm labor has pre-ed the owners of property on which ctionable hedges have been permitted hade the road and obstruct the view, ı having them cut as required by law. re can be no excuse, however, for the re of property owners to at least cut the hedges at road intersections and corners. Many accidents occur on the public roads each year because the view is obstructed by a dense growth of hedge brush.

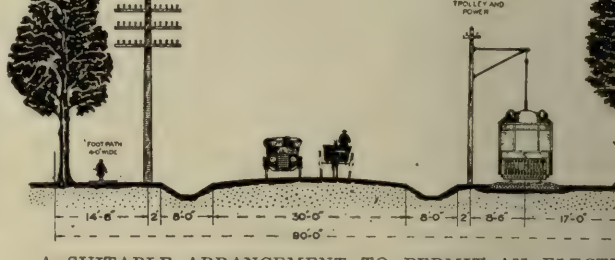
All the hedgerows should be cut to a height of five feet. This should not, however, prevent owners of shade trees from leaving occasional trees along the road for fence posts. Care must be taken that the road is not shaded to such a degree that the surface water will not evaporate readily.

Width of Provincial Highways

By W. A. McLean
Deputy Minister of Public Highways, Ontario, Canada

EDITORIAL NOTE: *Canada is coördinating the county highways systems to form "provi highways" similar to our "state highways." Adequate drainage and the need for wider allowances than have been contemplated in the past are discussed in this article. The au feels that larger expenditures for acquiring land necessary for widening trunk highways not warranted because of the benefits directly accruing to adjacent lands.*

ONTARIO is to-day faced with the need for certain continuous main highways, particularly in the more densely settled portion of the province, for the purpose of linking up county road systems, and joining together, by adequate arteries, the more important cities and towns. In order that such continuity may be provided, and the local municipalities relieved from any unfair burden of caring for this thru traffic, the Department of Public Highways has been authorized to assume, construct and maintain a system of "provincial highways."



A SUITABLE ARRANGEMENT TO PERMIT AN ELECTR RAILWAY ON ROAD ALLOWANCE

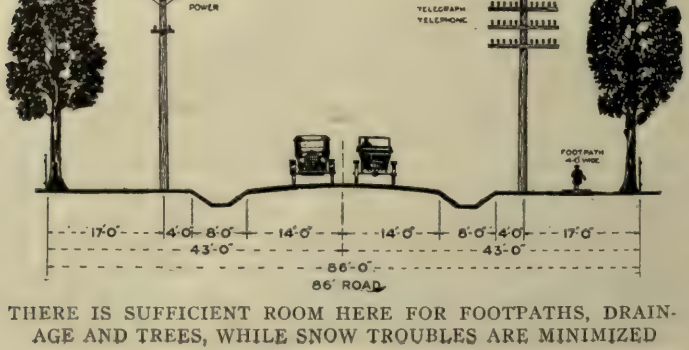
Building for the Future

The immediate need is a reasonably good road surface, which in turn demands certain preliminary work of drainage and grading. But those interested and responsible would be seriously blamable if the needs of the future were overlooked. The planning of a system of main provincial highways gives an opportunity to provide adequately for the future at moderat and a minimum of inconvenience b ranging for an adequate width of roa

A Process of Development

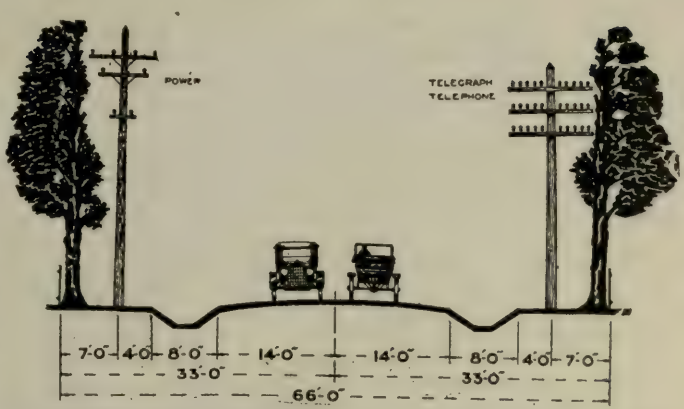
In order that even a gravel or stone surface may be maintained in sections, a certain amount of substanti provement will be necessary, particula provide adequate drainage—for w proper drainage, no class of surface kept on a road within reasonable cost. culverts and bridges will be necessar these will be built of permanent c New bridges and culverts, drainag widening for safet all demand a consid amount of gradin earthwork from po point; so that, pendi time of more perm surfacing, a process velopment can be c on at a moderate cost, which can b for from current r from year to year.

If conditions this development n such that all preli



THERE IS SUFFICIENT ROOM HERE FOR FOOTPATHS, DRAINAGE AND TREES, WHILE SNOW TROUBLES ARE MINIMIZED

k can be completed paid for before the nanent surface be- es necessary; and so the final cost of the l may entail a mini- n capital expenditure. the meantime, traffic have received the best ible service, and many minary arrangements be made. These pre- nary arrangements ld especially include isions for a suffi- ly widened and prop- located road allow-



ON THIS NARROW ROAD ALLOWANCE TREES ARE DESTROYED TO MEET THE NEEDS OF ELECTRIC SERVICES

Width of Road Allowance

ain highways of to-day serve purposes contemplated when originally surveyed made their present widths. Half a cen- ago the use of roads was confined to service—the comparatively slow horse- n traffic. Roads in the first survey made forty feet wide, but this was d too narrow. Soon a width of 66 feet adopted, as in England, and was made general standard of the province. This ample to provide a roadway, drainage, paths and rows of trees, the natural lement of an attractive roadway.

-day, in addition to horse-drawn traffic, fast-moving motor, the heavy motor , require an added width of roadway rdinary safety—safety not alone for the but rather for the horse-drawn vehi- The telephone line (sometimes two or competing companies), the telegraph electric light and power lines, some- the electric railway, demand a place he main highway, if public require- s are to be adequately served. The path, owing to the amount and dangers otor traffic, becomes a necessity where reviously required.

a result of the encroachments of these ces, the magnificent rows of trees h formerly lined many of the roads been cut and disfigured, in the end oyed, in order that the needs of tele- e and other wiring systems may be Property owners, knowing the ulti- fate of trees, are discouraged from ing them along the highway. It has me apparent that, if trees are to be permitted on main routes of travel, a width of 66 feet or less, where all services are carried, has ceased to give sufficient room, and greater width is needed.

The widening of the provincial highway system can only be attained thru the loyal coöperation of interested property owners. The additional amount of land required is comparatively small. To widen a 66-foot roadway to 86 feet requires approximately two and one-half acres per mile. This acreage per mile means a very small area from each farm. Where electric railways are now in existence or anticipated, a width of at least 90 feet is desirable. Unquestionably a farm fronting on a wide, safe highway, carrying a full complement of telephone and power service, a convenient footpath, and lined with trees, is benefited thereby much more than the value of the additional land necessary.

In an important sense, the land is not taken from the front of the property; for the travelled roadway is no nearer to the buildings; and the farm still has a front, but on a better and more imposing highway.

The coöperation of property owners should therefore arise from self-interest, as well as from a spirit of patriotism in attaining a work of such manifest public and private advantage—a work of which the province as a whole may well feel proud.

While coöperation is sought, the Department feels it desirable, on behalf of provincial benefit, to pay property owners for the land an amount which will be equitable and relieve them from temporary inconvenience. But the Department does not feel justified in entering upon a large expendi-

ture for this purpose, in view of the benefit directly accruing therefrom to those from whom the necessary but small amount of land is bought. The amount paid for land is intended to be on a uniform basis for all, and for any district, as far as possible, a fixed ratio to the assessed value. The province would also make a fair allowance for any valuable improvements, permanent stone fences, fruit trees, etc., within the area taken; for the moving of any building, if immediately necessary; and, if necessary, would move existing fences. In many districts, property owners may feel that fences are unnecessary.

These terms have been generally accepted by property owners along the Ottawa-Prescott Highway, and the widening of that highway to a width of 86 feet is now assured.

This work, it should be emphasized, is being done with a view to the future, as well as to the present. It is not to be expected that the full width sought could be had for the entire length of the road at once, except by unreasonable expense, and unnecessary inconvenience to some property owners. Thus the moving of large and valuable buildings is not contemplated. It will be enough if, in special cases, arrangements can be made whereby, in process of time when rebuilding becomes necessary, the land can pass to the province as part of the road allowance. In the meantime, the best possible adjustment can be made. In some cases the widening can be all on one side, or more on one side than the other to avoid buildings or valuable improvements, or to improve the location of the road. The convenience and wishes of property owners will be met as far as possible by suitable adjustment of the plan of widening.

Shade and Ornamental Trees

The object of the Department is to beautify the provincial highway—not to destroy beauty. Existing shade and ornamental trees will not be unnecessarily cut or injured. Trees will be conserved,—not wasted.

Where no trees are now growing, the standard cross-section can be closely followed in tree-planting. Valuable standing trees, on the other hand, will be preserved as far as possible, and the general d of the road modified to this end. A able variety will thereby be created c highway.

The cutting and mutilating of tre telephone, telegraph and power com will be guarded against, and proper pr insisted upon.

Trees are objectionable along a mac or gravel road only when so planted exclude an amount of air and sunlight sary to dry the roadway, or when the interfere with drainage. To this end planted by the Department will be greatest possible distance from the roa —at the margin of the road allov They will not be planted too close tog will be pruned upward to admit ai sunlight, and the denser varieties of trees will be avoided.

Distribution of Cost

The general distribution of the c provincial highways is very favoral local municipalities. Additional land sary for widening, the cost of grave and stone quarries, the cost of mac and its repair, all engineering and head charges, and departmental super are paid entirely by the province. W road is assumed as a provincial highwa province becomes responsible in ca accident. The municipality is given, fect, an accident insurance policy wi spect to the road.

The municipality is required to pa thirty per cent of the cost of labo material actually placed in the roa amount considerably less than the necessary expenditure.

Safety, Convenience, Appearanc

The coöperation of all adjacent pr owners in all matters is urged in so de ing the system of provincial highways provide a maximum of safety, effi convenience and attractive appear all factors in which adequate width o allowance is necessary. The inter property owners in the development o provincial highway is invited and s with a view to a maximum of improv

Acknowledgment.—Reprinted by courtesy *Canadian Engineer.*

hat Do the Various Types of Paving Cost on Country Roads?

eral Data of Value to County Engineers, Covering Costs Per Square Yard and Excluding Earth Work and Bridges

By M. W. Watson
Acting State Highway Engineer of Kansas

IE subject of cost on paving work at the present time is one which tries the imagination of any highway engi- An estimate made to-day is of little a few days hence, and for me to he exact cost of any type of pavement be out of the question. Many mis- standings and disputes arise from en- rs and promoters of highway improve- giving out figures on the cost of high- vork as a definite price based upon as- l conditions.

ere are so many things that can enter he cost of a highway that we must nto account all the conditions applying e attempting an estimate. The avail- y of materials, the length of haul of ials, the topography of the country, naracter of the soil, and so many other tions will so greatly affect the esti- that the figures which I am giving not be applicable to every highway in ate.

Paving Cost Data in Kansas

quoting the prices received at a letting oad construction, the press very fre- ly gives the cost per mile including the work and culverts. This is deceptive e public, as the earth work on a par- r job may be so much greater than nother job that in comparing the two it l seem that the cost of one section of was excessively high. The culverts l fixed and necessary addition to the of any road, and would be the same re- ess of the type, which is also true of work. The bids received for the 20- brick pavement at Great Bend on Jan- 3 showed a price for the pavement it- of $3.90 per square yard. This is for a h vertical fiber brick placed mono- ally on a concrete base 4 inches thick ie sides and 6¼ inches thick at the r.

e bids received for a monolithic brick road at Junction City during 1918 were $2.97 per square yard for 3-inch vertical fiber brick placed monolithically on a concrete base 3 inches thick at the sides and 5¼ inches thick at the center.

The variation in price between the two pavements mentioned was brought about by many conditions. The freight rate on brick is higher to Great Bend. The freight rate on cement is higher to Great Bend, and beginning January 1 the market price for cement applied on all work, regardless of whether it was constructed by the Government or by private individuals, which practically increased the price of cement for the Great Bend work about 13 cents per barrel.

Bids recently received in Labette County showed for a gravel road of feather-edge construction a price of 53 cents per square yard of roadway. For a gravel road with macadam base a price of 77.6 cents per square yard was received. The latter section had a haul for gravel of ten to twelve miles.

The prices received in Shawnee County for the two-course concrete road 18 feet wide, 6 inches thick at the sides, and 8 inches at the center, showed for one section $2.50 per square yard and for another section $2.75. The latter bid was based on the use of crushed granite from Wisconsin.

Costs in Other States

In order to determine a comparison between prices for paving in Kansas and in other parts of the country, I have obtained from other states the following information:

Tennessee.—Water-bound macadam, 8½ inches thick, 75 cents per square yard.

District of Columbia.—25,000 square yards, 6-inch concrete road, $2.25 per square yard. 5,000 square yards, concrete road, at $3.50 per square yard.

The latter price was for extremely rapid

construction, brought about by the needs of an airplane field.

Connecticut.—Concrete pavement (based on Kansas standard), $11 per cubic yard, or $2.20 per square yard.
2-inch bituminous macadam, $1 per square yard.
2-inch bituminous concrete on 6-inch concrete base, $2.66 per square yard.
3-inch asphalt, $1.95 per square yard.
3-inch asphalt on 6-inch concrete base, $2.50 per square yard.

Massachusetts.—Concrete, 7½-inch average thickness, $2.40 per square yard.
Water-bound macadam 6 inches thick, with ½-gallon oil application, $1.50 per square yard.
Bituminous macadam (penetration), bottom 4 inches thick, top 2 inches thick, $2 per square yard.
Bituminous concrete (mixing method), bottom 4 inches thick, top 2 inches thick, $2.20 per square yard.

Wyoming.—5 miles of concrete pavement at $2.60 per square yard.
8 miles of concrete pavement at $2.56 per square yard.

Nebraska.—Estimate of brick pavings costs, $4 to $4.25 per square yard.

Mississippi.—3½-inch brick on 4-inch concrete base, $3.10 per square yard.
Gravel roads, $4,000 per mile.

Rhode Island.—Concrete pavement, $12.50 per cubic yard, or $2.50 per square yard.
Bituminous concrete (Topeka type), 2-inch top only, 60 cents to 87 cents per square yard.

New Jersey.—Sheet asphalt and other bituminous pavements, $2.05 to $2.50 per square yard; average for 6-inch concrete pavement, $2.60 per square yard.
18-foot concrete pavement, 8 inches thick at the sides and 10¾ inches in the center, $3.70 per square yard.
18-foot concrete pavement, 8 inches
at the sides and 10¾ inches in the c
$3.20 per square yard.
18-foot concrete pavement, 8 inches
at the sides and 10¾ inches in the c
$2.75 per square yard (by convict labo
18-foot concrete pavement, 8 inches
at the sides and 10¾ inches in the c
$3.80 per square yard.
18-foot concrete pavement, 6 inches
at the sides and 8¾ inches in the c
$2.80 per square yard.
18-foot concrete pavement, 6 inches
at the sides and 8¾ inches in the c
$2.63 per square yard to $3.00 and $3.
Bituminous macadam, $2 per square y
Granite block, concrete base, $7.05
square yard.

Taking the prices received in these
states and making assumptions on local
ditions, I would estimate that under av
conditions the cost of a gravel road
run from 50 cents to $1 per square
a water-bound macadam road, fro
cents to $1.50 per square yard; a bitum
macadam road, from $1.50 per square
to $2 per square yard; bituminous co
on a concrete base, from $2.25 per s
yard to $3; Portland cement concrete,
$2.25 per square yard to $3.25; brick
ment, from $3.50 to $4.25 per square
These prices seem exceptionally hig
paving, but it should be considered tha
prices of all commodities have incr
materially above former prices, and we
learn to think that road work costs ha
creased correspondingly.

A National Highway Commission Endorsed

American Road Builders' Association Passed Resolution Favorable to National Highw

Whereas, the President of the United States in his recent message to Congress recognized the value of improved highways in the general transportation system of the nation, and definitely recommended and urged their rapid development; and

Whereas, this work is necessary to give employment to our returning soldiers and also to furnish worthy projects on which unemployed labor can be engaged during the period of readjustment, and

Whereas, we recognize the necessity for a well-defined and connected system of improved highways in order to expedite the distribution of large volumes of foodstuffs now wasted on account of lack of prompt and adequate highway transportation and to better serve the economic and military needs of the nation,

Therefore be it resolved: That a Na
Highway Commission be created to pr
and guide this powerful economic de
ment of both highways and highway
and establish a national highway syste

Be it further resolved: That the p
appropriations for federal aid to the sta
continued and increased and the states
to undertake extensive highway constr
so as to keep pace with the developme
this country and its transportation need
in carrying out the provisions of the p
federal aid act or any amendment theret
the National Highway Commission whe
ated shall coöperate with the state hig
departments.

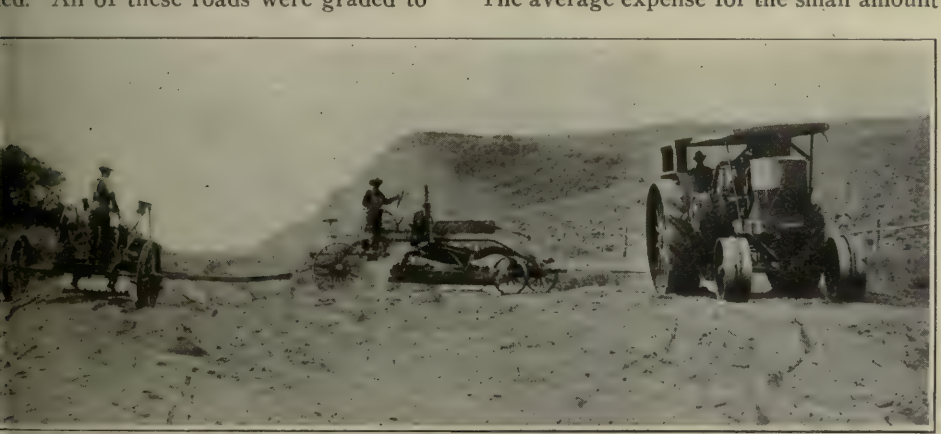
Be it further resolved: That all F
Government activities with respect to
ways be administered by the National
way Commission.

The Tractor in Road Work

Economy in Road Grading with Tractors in Union County, Oregon

By J. F. Phy
County Judge

NION COUNTY, Ore., is in the heart of the Blue Mountains, and consists largely of mountain territory, with Grande Ronde Valley in which the city La Grande is located. Consequently, way work in this county consists both ountain and valley work. When the nt commissioners began their work, in , they succeeded in building 47 miles of ntain road leading into the valley, 52 s of valley road, and 28 miles of par- constructed valley road, which was ned, thoroly drained and properly ed. All of these roads were graded to



CTORS AND ROAD GRADERS PROVED OF INESTIMABLE VALUE IN PUSHING ROAD WORK IN UNION COUNTY, ORE.

idth of 30 feet and taken down to a anent grade, as prescribed by the State ineer for finished or permanent road- The whole of this work was accom- ed in one hundred and sixty working

ad Machinery Demonstrates Its Value

he road machinery used to prosecute work consisted of an Avery tractor and graders of 13- and 8-foot blades re- tively, which were purchased by the nty Judge and Commissions of Union nty in 1916. The outfit was delivered y in the spring of that year under a rantee as to its power, strength, effi- ciency, and ability to cut down road expenses. After a few days' test by the Court, the road machinery was accepted. Like most expensive equipment purchased by municipalities and county boards, it caused a great deal of criticism of the Board, as many taxpayers claimed it was unnecessarily extravagant. Within a few weeks, however, when the efficiency of the outfit was thoroly demonstrated, the Board was petitioned to purchase two more duplicate outfits, placing one in each of the three districts of the county.

The average expense for the small amount of construction and the large amount of maintenance of the county roads with this outfit amounted to $23 per mile for the completed work. This figure covered all repairs and an allowance of 15 per cent depreciation against the machinery, and included the cost of gasoline, oils, greases and waste used in the operation of the machinery, all labor bills, including supervision, and all expenses that could possibly be charged against the outfit.

The work in the valley was very easy, as the soil was in excellent condition for grading. The 47 miles of mountain road was of a decidedly different character, be-

ing winding, uneven and rocky. Many rocks were torn out of the roadway by the grader, and some were of such weight that they could not be rolled from the roadway except with the aid of the tractor, which hauled them out with a chain.

In 1917 a duplicate outfit was purchased, which has been thoroly successful in operation ever since and has given great impetus to the road program of Union County. T last year, owing to the necessary reduc in road work due to the war, maintena and construction work was largely confi to the main-travelled roads of the cou A large amount of work will be done year in this county on the extension of Columbia River Highway thru eas Oregon.

A Ruined Road



Courtesy of P. P. Sharples

A WASHOUT ON A ROAD IN PETERBOROUGH, N. H.

Thru an oversight the article, "A Ruined Road," which appeared on page 105 of the February, 1919, issue of the Town and County Edition of THE AMERICAN CITY, was published without the above photograph.

This illustration shows the disastrous effects of a torrent of water rushing across a road for even a short time. In some points the excavation reached to a depth of six feet, due solely to the scouring actio a rainfall of forty-five minutes. The vert, built forty years ago, had always h dled storm water satisfactorily and found to be clear after this shower.

The photograph is shown as a warnin all highway engineers, and to call atten to the quick and thoro work of a torren water in road wrecking.

Force Account Builds New Roads

Wood County, W. Va., Develops an Economical System of Administration and Construction

By Burdette Woodyard
County Road Engineer, Parkersburg, W. Va.

THE first piece of improved road in Wood County, W. Va., was built in 1907. During the winter which followed, people who traveled this improved stretch noticed so much difference between it and the ordinary pair of mud ruts to which they had become accustomed, that the following year twelve additional miles were improved with the labor of county prisoners. This improved mileage made such a favorable impression upon the taxpayers that in 1911 they willingly voted a bond issue of $180,000 for further highway improvement. Since the first bond issue, a total of $535,000 has been voted for extending the mileage of pavements. Wood County now has twenty miles of excellent concrete roads, most of them 14 feet wide and of one-course construction.

For the last four years all of the road work in Wood County has been done by force account, and the method has been found very satisfactory. In general, it may be said that where there is much work to be done at any one time, the contract method is the better; but where a county is doing a certain amount of work each year with funds provided only as needed, the force account method can be used to good advantage.

Planning Ahead

Wood County has developed a comprehensive plan for improving its roads and for insuring during a term of years the necessary funds. Under such conditions it has been possible to develop and maintain a highly efficient organization of thoroly trained men who are always available and who have acquired more than a passing interest in the quality of their work. It has been found that an organization of this kind need not be disbanded at the close of a construction season, for during the winter the force is kept together by using it for various kinds of road work, including repair of equipment and maintenance of shoulders and secondary roads.



OLD NORTHWESTERN PIKE, W. VA.

A concrete highway leading out of Parkersburg, W. Va., and a good example of a well-located road

True Economy in Road Work

For efficient force account work and on permanent road improvement, Wood County has found that true economy lies in providing plenty of high-grade equipment and in keeping it in constant repair. The county owns two complete concrete-road-building plants, which include a fleet of motor trucks for hauling materials. The successful contractor will provide himself with every labor-saving device and the best machinery he can buy if these promise a profit—and a

county that undertakes road work by force account can expect the same efficiency from labor-saving machinery and equipment. A number of counties which have tried the force account scheme have been too conservative in purchasing necessary equipment, with more or less unsatisfactory results. Wood County is learning from experience that the best equipment is the cheapest in the long run.

Careful investigations extending over a period of several years' observation have influenced Wood County to adopt concrete as the standard type of construction. We have found that by using good, clean materials, and by careful and painstaking workmanship, which includes proper precautions as to curing the pavement, it is possible to secure a concrete road that is practically indestructible. In all of our work we are using Ohio River sand and pebbles. The wearing quality of these roads is indicated by the fact that on some of them now going into their eighth year of service, the marks of the finishing float are still clearly visible.

By adhering strictly to the practice of building the highest possible type of road we have developed and retained the taxpayers' spirit of willingness to vote each year additional funds to extend the mileage of concrete. This in itself is a most convincing testimonial of the soundness of the county's investment in this type or road and its practice of doing the work by force account.

Since Wood County's first bond issue in 1911, 34 of the 55 counties in West Virginia have voted a total of $18,291,500 in bonds to build permanent county roads. During 1917, contracts were awarded or other provisions made to permanently improve 316 miles of road, 218 of which are to be concrete.

The Scope of the Highways Industries Association

Recognizing the need for a coördinated movement to promote the broadest possible development and utilization of the highways of the country, a number of men active in the industries having directly to do with the building and use of highways about a year ago organized the Highway Industries Association, with S. M. Williams of Lima, Ohio, as President.

The aims and objects of this Association are "to assist in coördinating the highways with the other transportation agencies of the country; to encourage the development of the highways that will advance the economic life of the nation; to stimulate their use in such a manner as to facilitate and cheapen the transportation of food, raw materials and finished products; and to coöperate with government agencies, both state and national, to the end that our highways may be of maximum service in the transportation system of the country."

This organization involves in its membership those who are interested in the administration, design, and construction of roads; those who furnish materials, equipment and supplies used in their construction; those who manufacture motor vehicles and other equipment which operate over the roads; and those private citizens or business houses who actually use the road for pleasure or business purposes; so that as a whole it is representative of every class of men interested in the development and use of highways.

One of the most important activities of the Association at present is being devoted to the formation of a Federal Highway Council for the purpose of crystallizing sentiment thruout the country for a Federal Highway Commission. The determination to undertake this work was the outgrowth of the joint Highway Congress held in Chicago in December last under the auspices of this Association and the American Association of State Highway Officials. At this meeting it was recognized that highway development in this country had reached the point where it was too big and too broad to be continued as a part of some other Federal department, but rather should be conducted by a separate and specially organized department to carry on the work.

The resolutions adopted at the Chicago meeting, covering a Federal Highway Commission plan, have been sent to leading business organizations, chambers of commerce, boards of trade and a number of other national and state organizations, and from these more than 300 replies have been received endorsing the movement and the aims and endeavors of the Highway Industries Association.

The work of the association is bringing to the country a new realization of the importance of the highway as a factor in transportation and the necessity of improving the highways so they may become of real value to the different communities which they serve. Having the affiliation of civic, commercial and industrial organizations thruout the country it is making possible coördinated leadership in highway development and utilization that is serving to bring about the desired results for agricultural, commercial, industrial and general public good.

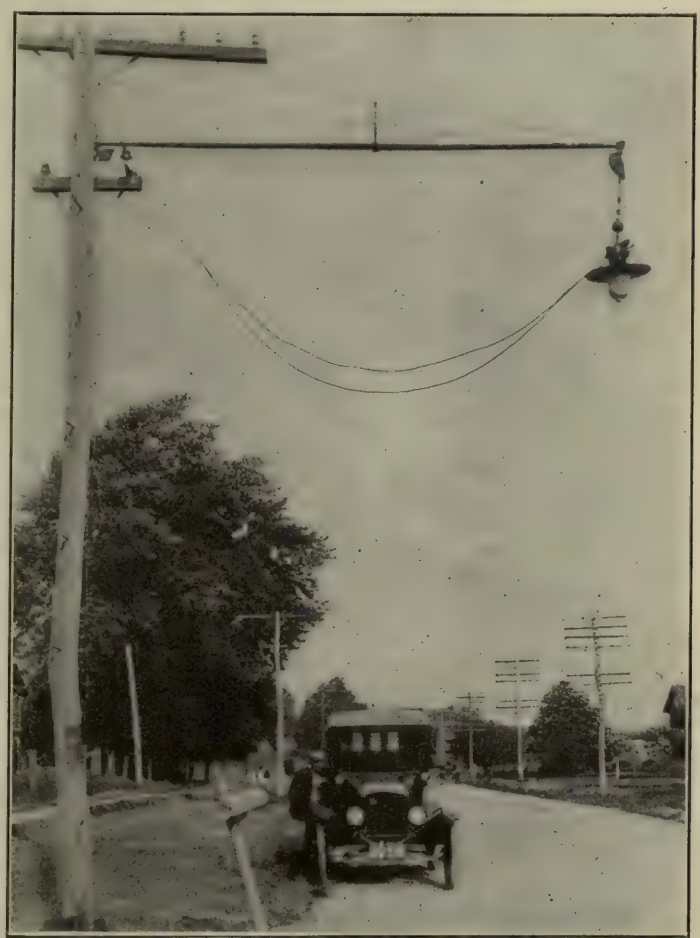
From the *Manufacturer's Record*, Baltimore, Md. February 20, 1919.

Lighting Country Roads

By P. Y. Danley

THE slogan "Back to the Farm!" which has been bandied about in a half-humorous way by our city brethren during the last decade, is coming to have a somewhat more serious significance. The comforts of the city have almost instantaneously been made available for the country-dweller with the introduction of electrical service. In a great many places today, any farmer or suburbanite with ordinary means can tap the wire that passes his house and convert his home and his business from a nineteenth century backwoods proposition into comfortable and convenient places in which to live and work. The interurban and the automobile are now axiomatic; motor-driven household and farm appliances are fast being approved and accepted. What next? Why not make it possible for the household on the country road to do a little neighboring after working hours? It's easy if they have a car, but the pedestrian must get out the family lantern and feel his way over a dark country road. This is often true even where there is an electric service overhead on that same road; whereas a little initiative on the part of the community could have the darkest places lighted with little expense.

The matter of providing illumination for our country roads has been given scant consideration in the past, because the need for it has never been seriously felt. A higher order of illumination is necessary under present conditions than ever before. The greater volume of automobile traffic demands it not only from the standpoint of safety to the tourists as well as the pedestrians, but also for greater convenience and comfort in traveling. The country road as a rule is narrow, and a reasonable amount of illumination in many places is entirely indispensable to enable drivers to pass other vehicles without collision. Where the roads are rough and in poor



Courtesy of the Westinghouse Electric and Manufacturing Co.

MAST ARM WITH LAMP SUPPORTING PULLEY AND HIGH-VOLTAGE INSULATOR, FOR COUNTRY ROADS



A STREET HOOD EQUIPPED WITH A CABLE CLAMP FOR MOUNTING IN THE CENTER OF A ROAD

condition some illumination should be provided to help the tourists avoid mudholes and irregularities.

An Economical Lighting System

One of the chief stumbling blocks in the way of adopting rural lighting is the great expense which it has been believed such lighting would entail. However, under present-day methods of efficient and economical distribution of power, this expense need not be prohibitive. In many cases the roads already carry cross-country transmission systems from which power may be taken, and by means of small regulating transformers mounted on the poles the higher transmission voltages may be reduced to voltages suitable for operating small circuits of lamps connected in series and covering several miles of country road. Fixtures of an inexpensive design, like those shown, may be used with or without glassware. They should be placed by means of long mast arms, or by a cable strung across the road from post to post, so that the light is well out toward the center of the road where it cannot be obstructed by trees. These fixtures require little attention other than the occasional cleaning of the reflector and the renewal of burned-out lamps.

The entire system may be operated automatically by means of a time switch controlling the regulating transformer, so that no personal attention is needed other than the winding of the clock once in eight days. In this way a system may be operated at a relatively low first cost and with a maintenance expense consisting mainly of power cost and lamp renewals. It should not be expected that a uniform intensity of light be attained thruout, because the spacing distance would of necessity be relatively large, and direct illumination over the entire area might be out of the question. The silhouette principle may, however, be used to good advantage under these circumstances. The lights create a light background against which dark objects intervening along the road are shown up in relief. The nature and location of each object may be discerned by its dark outline against the light background. While this type of illumination does not enable one to discriminate or to observe the details of an object in the road, it is at least possible to see enough of it to avoid collision and increase the safety and convenience of travel for everyone.

In some cases prismatic refracting glassware can be used to good advantage. The refractor prisms send the light rays in useful directions and cause them to be distributed more extensively up and down the road. Their function is to make the light intensity more nearly uniform over the entire area to be lighted.

The mast arm type of fixture shown is very suitable for road lighting. It is a 20-inch radial-wave-reflector street-hood body equipped with a Sol-lux diffuser and may be used with lamps as large as 600-candle-power, consuming approximately 650 watts. The long mast arm serves to bring the light well into the center of the road, making it possible for that light to be useful for a considerable distance over the road. The other fixture shown is another design of street hood equipped with a cable clamp for mounting in the center of the road on a cable strung across the road between posts. This is a less expensive method of removing the light from the obstruction of trees hanging over the road, but it has the disadvantage of not being so readily accessible as the first fixture shown.

PHILLIPS UNIVERSITY LIBRARY

Making Road Signs in a State Penitentiary

By Frank B. O'Bleness
Executive Clerk, Ohio Board of Administration

A MEMBER of the Ohio Board of Administration, the central body controlling the twenty state institutions of Ohio, recently made a motor trip to pay an official visit to one of the hospitals in Southern Ohio. The trip can be made by one acquainted with the route in about four hours. In this instance it required seven hours because the Board member was not familiar with the roads, only a few of which were marked with dependable signs, and the information elicited from persons of whom he made inquiries was not always reliable. True, there were readable road signs here and there in some of the counties, but a majority of those he tried to decipher were of wood, weather-beaten, broken and faded beyond usefulness.

The traveler related his experience at a meeting of the Ohio Board of Administration, which became intensely, but unselfishly, interested in the proper and adequate marking of the highways of the state. This Board has nothing whatever to do with the maintenance of highways, but the law gives it the privilege, and the Board has the means, of supplying road and street signs to political subdivisions.

The two penal institutions of Ohio, the Ohio Penitentiary at Columbus and the Ohio State Reformatory at Mansfield, operate large industrial departments under the State-Use system, which superseded contract labor, abolished by a law passed by the Legislature in 1906.

Under Section 2228 of the General Code of Ohio, prisoners in the Ohio Penitentiary "may work for, and the product of their labor may be disposed of to, the state or a political subdivision thereof." Prison-made goods cannot be sold in the open market. Another section (7469) provides that "The township trustees shall cause to be erected and kept in repair at the expense of the township, at all intersections of public ways of the township which lead to a city, village, depot or other important place or road, a post with guide boards displaying in legible letters the name and indicating the direction and distance to all such places to which each of the roads leads."

Not with the intention of "forcing" the township trustees to purchase and erect road signs, but merely to give them the opportunity to obey the law at a minimum cost and at the same time do their part toward making Ohio's great public highway system still better, the Ohio Board of Administration installed a road and street sign



RENEWING THE BLACK BACKGROUND ON A ROAD SIGN

manufacturing plant at the Ohio Penitentiary. In addition to giving official notice of its readiness to supply signs, the Board issued a special booklet for distribution to prospective purchasers among county commissioners and township trustees, in which it calls attention to the state-made "indestructible road signs" in the following language:

"This is an age of progress. Progressiveness has brought us all the modern aids and conveniences that make easier the lot of man.

"However, there is one feature of progressiveness that has not kept pace with the times—the proper marking of the highways to guide the 'stranger in a strange land.'

"In the cities there are signs at every street intersection. Why not afford this convenience to visitors traveling the public highways in your community by placing along the roads and at highway intersections signs that will direct them on their way?"



A SIGN ON AN OHIO HIGHWAY

In the machine shop of the big Ohio State Prison a force of inmates who had been sitting in idleness are now turning out handsome indestructible road signs, made of steel plate, with drilled-in letters and figures. In another department other prisoners are literally pouring out reinforced concrete posts, upon which the signs are to be mounted. The completed sign is attractive and durable, and one that is sure to be welcomed by travelers. The lettering is finished in aluminum paint upon a background of black, permitting the wording on the signs to be easily read. The signs can be renewed without being removed from the posts. To do this, skilled labor is not necessary, as any boy with a bucket of paint, a roller and a brush, can in a few minutes refinish a sign to look like new.

The Ohio Board of Administration points out that by having the street and road signs made in the Penitentiary there are many advantages in addition to those already mentioned. One of these is economy, for the state can produce, sell and distribute at a figure that cannot be met by an outside firm There is no heavy overhead expense; the labor and power are already available; the state is not obliged to carry on a selling campaign; uniformity of design, size and color can be assured; the state receives some return for the maintenance of the prisoners; the people will patronize a home industry and at the same time render financial assistance to the state, and the public will have confidence in state-guaranteed signs, knowing the great commonwealth of Ohio is back of them.

No doubt the Federal Government will welcome the erection of road signs, especially along the great routes for motor trucks, which are now relieving the strain upon the railroads. The proper marking of these truck routes and other intercounty and interstate highways is held just as important as the construction and maintenance of such roads. Reports of fleets of government trucks losing their way appear from time to time, but if these routes were properly equipped with road signs the delays occasioned by taking the wrong roads would be minimized, or even entirely eliminated.

Harrow Out the Weeds

No one would select sod, weeds and brush for road materials, yet many road overseers, in using a road grader, drag just this sort of material into the center of the roadway—and, worse still, they leave it there. The result is soft, spongy spots which interfere with traffic. On the other hand, it is impossible to grade a road properly without removing weeds and brush from the ditches, and the grader naturally draws this material to the center of the road. Excellent results have been obtained by thoroly harrowing the road immediately after or during the time it is being graded. An old-fashioned spike-tooth "A" harrow is best. Weight the harrow down well with some logs or a box filled with stones, and as the weeds and brush are collected, fork them over onto the unused portion of the right-of-way, or arrange them in piles and burn when dry.—*Missouri State Highway Bulletin.*

Rural Fire Protection

What Should Be Done in America to Stop "Total Losses" in Country Districts

By T. Alfred Fleming

State Fire Marshal of Ohio; President, The Fire Marshals' Association of North America

GIVE a rural fire a fair start, and the loss is generally "total."

In the period of *reconstruction,* a fire in a rural community means:

1. The destruction of crops that cannot be replaced until next harvest
2. The destruction generally of wooden buildings that, owing to the price and scarcity of lumber, are difficult and expensive to replace
3. The swinging out of plumb of a pendulum in agricultural production
4. The throwing of a family, or families, upon the husbanded resources of another family or families, the members of which should not be hurled from their stride in the race to do their part in feeding and clothing the world

In cities and large towns, a building may be rebuilt; employes may find work during the rehabilitation of their plant; and the groceries can furnish food. But remember, America is living *upon her capital* of foodstuffs; and, until the harvests, good or bad, are garnered, that *capital* must feed not North America alone, but starving millions abroad as well. Therefore a rural fire, economically, is more destructive than a city fire, because that which is burned in the country cannot be replaced except by Nature, plus hard work by the farmer.

The First Step

The first step toward eliminating fires anywhere lies in fire prevention, and this is taken by a careful elimination of the conditions that make for fires. This is individual effort, another first forward movement toward the goals of coöperation and community protection. About 90 per cent of all fires are due, first, to causes that are preventable, and, second, to carelessness.



THE LENOX, MASS., FIRE TRUCK STARTING ON A LONG RUN TO SAVE A DISTANT HOUSE FROM TOTAL DESTRUCTION

If both these can be chopped one-half, the fire waste in the United States of $450,000,000 per year and the per capita tax, in peace time alone, of $2.10 will show a corresponding reduction.

Before going into the subject further, we will briefly mention the farm barn as the focal point of danger. Statistics gathered for a period of seven years show that lightning was responsible for 35 per cent of all the barn fires; that to spontaneous combustion can be laid 10 per cent; and to incendiarism (external and internal) and to causes undetermined, 25 per cent. The other 30 per cent can be charged to sparks, smoking, the careless use of lanterns, powder, etc.

Taking these causes as they come, we find by records that over 94 per cent of barns struck by lightning were unrodded or improperly rodded, therefore the reduction of this 35 per cent lies in rodding all tall farm buildings with standard rods installed according to code.

Care, the Cure

The 10 per cent of loss due to spontaneous combustion can be slaughtered by the proper curing of hay, clover, timothy and alfalfa before it is stored, and by a thoro patrol of the mows from day to day. Farmers know how to store hay, but sometimes, owing to weather conditions, they are forced to take long chances, often with disastrous results.

Incendiarism, so far as the exterior hazard is concerned, is hard to guard against. Interior incendiarism involves the question of the moral hazard, and becomes squarely a matter to be dictated by one's own conscience. An efficient constable in a community, and a quick report to the department of the State Fire Marshal of all suspicious acts that may lead to fires, together with a rigorous prosecution of culprits, and a better understanding by the juries, will go far toward stamping out arson of both kinds. Good stiff sentences are the rocks that wreck the craft of the fire bug. All fires have a cause, but that cause is not always determined, as there is very little to work upon if a building is totally destroyed. However, a large percentage of "undetermined" fires are largely due to carelessness somewhere along the line. As far as smoking, matches and lanterns are concerned, the individual farmer is the autocrat of his own hazard. It is up to the individual farmer to cure this triple evil.

All power—gasoline or steam—engines should be kept out of the barns, and all belts and bearings that have a place anywhere in the structure should be watched, for friction may develop where least expected.

A clean barn makes for healthy stock, and is a long step toward fire prevention and fire protection. That long grass and weeds should be kept away from all buildings is almost an axiom.

Rout the Rat

A rat will eat 40 pounds of grain and other crops per year, and it is estimated that there are 200,000,000 rats in America. A rat is also a disease carrier and a fire menace. A judicious use of cement and fire- and tooth-resisting material in farm construction work will go far toward reducing the board of the four-footed pests. Spaces under sheds should be kept clear and clean, and lumber should be piled so that it will not become a rat-infested, rotting pile.

We can see no particular reason why Americans should pay a rat hotel bill each year of $250,000,000, especially when we need every grain there is in sight. If only half the rats in America were to be destroyed, that would mean a saving of $125,000,000.

The rule of cleanliness applies to the farmer's home as well as to his barn, granaries and outbuildings, to his fields and wood lots. As a fire-loss-reducer, intensive cleanliness pays as well as intensive farming does in the elevator and commission checks.

How to Protect from Fire

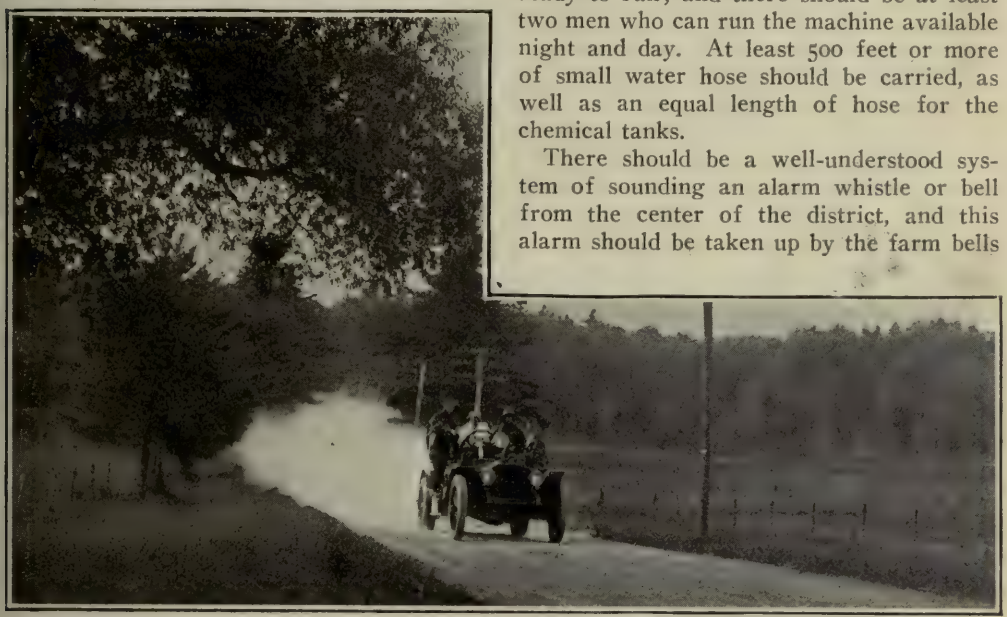
Home farm protection lies in:

1. Keeping the place free of rubbish and fire-breeders
2. In having adequate means to fight incipient blazes; and in the installation of small fire extinguishers in barns and homes
3. In having a sufficient supply of water
4. In the proper rodding of buildings
5. In using cement or fire-retarding or fire-proof material for construction work
6. In grouping the farm buildings, so that one fire will not subject the entire place to destruction.

It may be handy in the winter time to have the barn, cow sheds, granaries and woodshed all connected, and just as available for protection against the elements as a vestibule train, but such grouping is not safe.

The farmer should have two ladders, long enough to reach the eaves of his tallest buildings. He should have fire barrels always full. In the winter time he should use enough salt in them to prevent freezing; he should have fire pails hung about and used for no other purpose. He should know where the ax is. He may need it.

In a fire, time is everything. A drop of water will blacken a spark, but it takes a *river* to *stop* a *conflagration!*



"BURNING" COUNTRY ROADS WITH A MOTOR FIRE TRUCK SAVES MANY TOWNS FROM HEAVY FIRE LOSSES NEAR LENOX, MASS.

Good roads, a motor fire truck and organization is an effective combination

If the individual can know his place is free of ordinary fire hazards, his water supply adequate for "peak load" needs, and his fields and wood lots free from weeds and brush, then he is ready to take up cooperation and the community idea.

The Community Idea

When each rural community of a five-mile radius in the United States owns a combination water and chemical, motor-driven fire truck of light weight and good speed, rural fire losses will take such a tumble that the result will jar the nation.

Such apparatus ought to be purchased for $1,500 or less and paid for by tax, special assessment, or individual contribution. The machines should carry chemical fire extinguishers, axes, hooks, ladders and hose for water purposes, should have a speed of at least 30 miles per hour, and by a shifting of gears should be able to use its own power to pump water.

The machine should be located as near the center of the five-mile radius as possible; it should be protected from the elements so that the engine shall always be ready to run; and there should be at least two men who can run the machine available night and day. At least 500 feet or more of small water hose should be carried, as well as an equal length of hose for the chemical tanks.

There should be a well-understood system of sounding an alarm whistle or bell from the center of the district, and this alarm should be taken up by the farm bells as well. The circle should be divided into segments and each segment numbered, so that the whistle or the bells may direct the firemen which way to go.

Nearly all farms are connected up to some village exchange. If, in case of fire, the operator on the exchange is notified, she can immediately get in touch with the neighboring farms and have the individuals repeat the alarm on the farm bells and call in the men from the fields. When they respond, they should carry fire pails, axes, and, if the run is not too long, ladders. Knowing the direction they have to go,

some of them can catch the machine and increase the crew. Most farmers own automobiles. These could be used to reach the fire.

This community unit should have a responsible head, who should be sent to "school" for a time at the nearest city department, where the most modern methods of fighting fires and the care and handling of equipment can be studied at first hand.

Every home should have a fire extinguisher. It should be examined frequently, to see that it is in working order, and everybody about the place should know how to use it to the best advantage.

The efficiency of a volunteer fire organization does not depend upon size, but upon efficiency. Four men working in harmony and with a definite object in view can do better service than twenty who are running rings about themselves while barn, silo, granary or house burns. Every man in a community fire department should be perfectly familiar with each piece of apparatus and just how to use it to the best advantage.



APPLETON, WIS., HAS A MOTOR AMBULANCE, IN ADDITION TO ITS MOTOR FIRE APPARATUS, THUS GIVING PROTECTION TO LIFE AS WELL AS PROPERTY

Examples of the Community Idea in Practice

Hollandsburg, Darke County, Ohio, a town of 350 inhabitants, possessed an antiquated hand engine and a volunteer department of 12 men. This equipment was inadequate, not only for the village but for use in surrounding farm property. A 3-mile limit was mapped out, and a popular subscription was started among the farmers and villagers. More than $1,100 was raised. Au automobile chassis was purchased, and on this the volunteers, without outside assistance, mounted two 35-gallon chemical tanks and a riding platform for five men, and equipped the machine with hand extinguishers, 200 feet of hose and other necessary appliances.

The truck makes 30 miles an hour, and since its installation has saved its cost many times over. In one instance the machine ran 15 miles and saved a railway trestle over which men and munitions were being hurried to the seaboard. In another fire, the auto ran seven miles and saved a barn and silo, when an immense straw stack was afire close to both. These fires were away out of the 3-mile limit, but this shows what community equipment is capable of.

A charge might be made for going out of the limit, and the overhead expenses of maintenance thus materially reduced.

Again, there is the case of Chippewa Lake, Medina County. A year ago, the residents of this small place purchased a 40-gallon chemical engine for $250. Chippewa Lake is not incorporated and has about 300 inhabitants. It needed better fire protection. A popular subscription was started, and the chemical was purchased. This was housed in a small building in the center of the village. The machine was manned by a

volunteer department modeled after the city idea. A small charge was made when the department responded outside the village.

This small chemical saved a $4,000 *church and its contents, and the up-keep was just* $20 *the first year.*

Bloomville, Seneca County, Ohio, has a new fire-fighting truck that responds to calls all over the township.

The entire fire loss in Bloom township in 1918 *was* $100!

The Reverse Side

Many other instances could be given, should space permit. There is no argument against community protection.

In an Ohio town, that shall remain nameless, two fires occurred in one day. Here is what the home paper said of the situation:

"When the alarms were sounded, but few men and boys responded. Hand propulsion was necessary to move the apparatus to the fires, and in consequence considerable time was lost in reaching the scenes. There was an utter lack of organization, as is generally the case of late. Our volunteer firemen, what few there are, for the most part were conspicuous by their absence. Fortunately, but little actual fire-fighting was required.

"This experience calls to mind the crying need of chemical apparatus for the local department. With such equipment mounted on a light motor chassis, it would be possible to make quick runs and to extinguish ordinary fires without the necessity of resorting to heavier and more cumbersome apparatus."

Standardization

America is coming into the realm of standardization. Fire apparatus is of no value if it cannot be used. If cities can couple up with hydrants and hose of adjacent cities and towns, then each can help the other in case of a conflagration. If hose will not fit hydrant, of what avail is it to call for assistance? The same rule should apply to rural community apparatus. STANDARDIZE!

In Ohio, thru the Fire Chiefs' Club and the Coöperative Fire Chiefs' organization, equipment is not only being made available in any city of the state, but Indiana, West Virginia, Pennsylvania and border states will soon be able to coöperate with Ohio, and Ohio with them.

In rural fire-fighting, the machine of one area ought to be able to coöperate with that in another. Several zones, by going together and buying apparatus in quantity, might be able to get a reduction in price.

Water-Supply

Chemicals are all right if they are put on a fire in time. Water is better, and soda-charged water still more efficacious. If a combination pumper is installed, there should be water to supply the pumps. Wells, cisterns, streams, ponds, reservoirs and tanks are generally available. If not, they can be quickly built and filled. Rainfall from roofs can be conserved in big cisterns centrally located on farm property, or the duck pond can be cemented so it will hold the surface drainage water. Whenever the farm has any power upon it, steam, wind, or gas, small hose for fire work should be installed. Pumps should never be placed close to any buildings. In case of fire, the pump, if set close to buildings, would be out of action.

Clean-Up Campaigns

In the spring, if well-managed clean-up campaigns are inaugurated in communities, two-fold results are obtained: first, an elimination of fire hazards, and, second, the spreading of fire-prevention education. So far as the home is concerned, the women can best run that part of the spring clean-up. Farmers' organizations, the country press, the clergy and the school children are great aids in ridding a community of fire hazards and in beautifying neighborhoods.

Good Roads

Last but not least in the reduction of rural fire losses comes the element of good roads. Without good roads time is lost in getting to a fire, and there is always the danger of stalling the machines or jolting them so that they fail at a critical time. You cannot run a 20th Century Limited over two streaks of iron rust and a right of way, neither can you do effective work with a fire truck on a swampy road. When rural roads are in shape for truck service, the farmer can sleep better at night.

Again, it is up to the individual farmer to see that his roads to house and barn are in such condition that the truck can come in at top speed.

See to it also that your bridges and culverts are safe.

An engine in the ditch puts out no fires.

Editorial Note.—The illustrations of the Appleton fire apparatus and the two illustrations of the Lenox, Mass., apparatus were furnished to The American City thru the courtesy of the Portland Cement Association and the American-LaFrance Fire Engine Company respectively.

Tree Spraying Service in Niagara County, N. Y.

Timely Information Distributed by Telephone to Fruit Growers

By Nelson R. Peet
Niagara County Agricultural Agent

THERE was a time when any special knowledge which a farmer might acquire was kept secret to himself for fear that its magic propensities might be lost if it became generally known. All progressive communities are rapidly outgrowing such ideas. Niagara County, New York, will never bring them back to life, for the fruit growers in that county have seen the benefit of working together and handing on information regarding the control of the multitude of insect pests and plant diseases which affect their fruit crops.

For several years the idea has been growing that the time of applying spray materials was just as important and probably had a greater effect than the thoroness with which the application was made, or than the exactitude with which the material was compounded. For instance, it had been noticed that the first application for apple scab was usually most effective when applied as the blossom bud began to show pink. However, some years it was not effective at all. Intensive scientific study by the experiment stations had developed the fact that apple scab disease is spread in the spring from old diseased leaves from last year's crop, and that the disease germs were scattered at a different period each year, depending on the weather, and that this period might occur at any time during an interval of five weeks. No one can anticipate the exact time at which this dissemination will take place. The most effective control is secured just before the germs are disseminated. The same principle holds true in the control of all insects and diseases. Preventive measures should be applied just before, and not too long before, the first appearance of the trouble.

The spraying service which was inaugurated by the Niagara County Farm Bureau looked to some system whereby an expert on fruit diseases and insects would be made available to the fruit growers of the county; whereby such expert could keep in touch with actual conditions in the orchards, and could keep posted on what would probably be the weather conditions three or four days hence.

An Endless Chain of Co-Workers

As soon as an outbreak was anticipated in any section of the county, this expert advised the Farm Bureau Manager, who telephoned to one man in the section that such an outbreak was imminent, and advised control measures. This grower telephoned three other growers, each of whom telephoned three apiece, and so on, increasing in the ratio of 1, 3, 9, 27, and 81. On account of the influence of Lake Ontario, of varying soil conditions and altitude, it was decided to divide Niagara County into six zones, each zone to include those orchards which might reasonably be expected to be sprayed at the same time.

Criterion Orchards

It would hardly be safe for any expert, no matter how well trained, to make a blanket recommendation covering all of the orchards even of one zone, for it is well known that two orchards separated only by a few hundred rods may show widely varying conditions, due to soil types. In order to obviate this difficulty, one orchard of each kind of fruit was designated in each zone as the criterion orchard, and the recommendations of the expert were all based on conditions in these criterion orchards, so that when a recommendation was sent out for Zone Four it implied not that all orchards should be sprayed to-morrow for the control of pear sylla, but that the criterion orchard in Zone Four will be sprayed for the control of pear sylla. If any question arose in the mind of any grower as to whether his particular orchard should be sprayed, he could then visit the criterion orchard and compare conditions there with those in his own orchard.

A Code System

There was some danger that recommen-

dations might become quite mixed by passing thru so many different hands. It was highly desirable that these recommendations be very accurate, because it makes considerable difference whether you spray apple trees with lime sulphur diluted 1-8 or diluted 1-40. The recommendations must necessarily be highly technical. For this reason a code message was worked out, and it was insisted that each grower write down the code recommendations on a blank with which he was provided, and then read it back, as a check for accuracy, to the party who had telephoned him the information. This code system was very simple and was extremely successful in keeping the recommendations from getting mixed.

The telephone communication system was worked out with a great degree of care, with these ideas also in mind: first, that speed was highly desirable; second, that parties on the same telephone line should be grouped so that no two people would want to use the same telephone line at the same time; and, third, that parties of unquestioned reliability should be placed at the head of the telephone system.



Photo courtesy Friend Mfg. Co., Gasport, N. Y.
TYPICAL SPRAYING OUTFIT IN USE IN NIAGARA COUNTY, N. Y.

Astonishing Results

In this way nine hundred fruit growers in Niagara County have been receiving for two years accurate, reliable, spraying service information on the same evening in which the recommendation was made by the expert. The results have been astonishing. It is now the popular thing to spray on time. It was not an uncommon thing three years ago for farmers who had their ground all fitted, to put off spraying even when they knew it was the proper time to spray, because they wanted to get their corn planted, but now when a spray service recommendation goes out, practically all the growers drop whatever work they are doing and attend to their spraying. Each grower applies himself studiously to the task of acquainting those men whom he is expected to telephone with the fact that it will be time to spray to-morrow. He realizes that the successful control of fungus diseases or insects in the orchards of his vicinity will bring next fall a larger number of buyers into his section, and the chances are that he

will receive more for his fruit because of the fact that the fruit of all his neighbors is good. He knows instinctively that a buyer usually goes to those sections where he can secure a high quality of fruit and a fairly large quantity of the high quality. This has brought about a different point of view. The grower now takes pride not alone in the quality of his own crop but also in the crops of all his neighbors. He will do almost anything to make this information service a success, and it has been a success. Accurate data secured in a scientific way in the criterion orchards during the season of 1918 show that there was less than five per cent apple scab on the fruit produced on trees sprayed according to the recommendations of the expert, while trees which were not so sprayed showed 65 per cent scab on those fruits which matured, to say nothing of the large quantity of fruits which fell off prematurely on account of this disease.

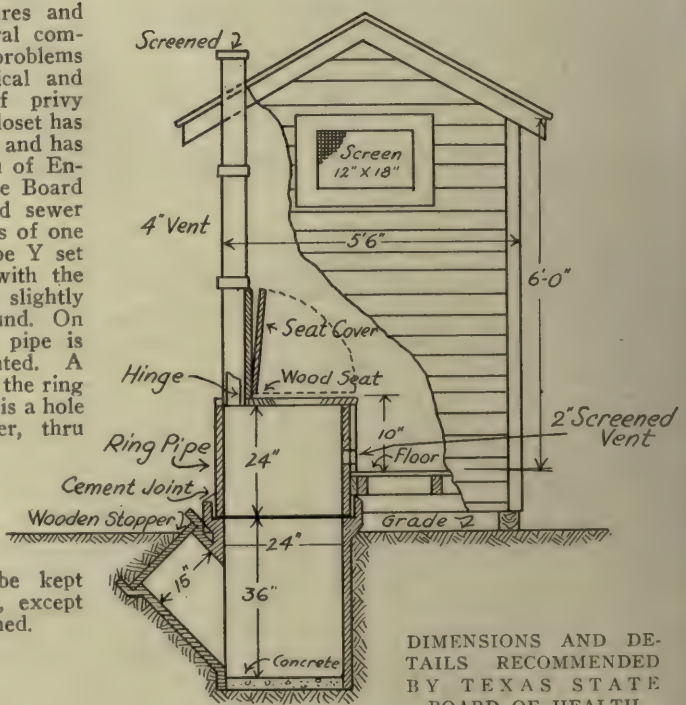
One grower bore evidence to the fact that he had never marketed a single cherry from four trees which grew in his front yard, on account of the cherry maggot, until last year, when he sprayed those trees according to the recommendations which he secured from the spraying service. This year he could not find a wormy cherry, and he sold $125 worth of fruit from those four trees.

The influence of the service on the county as a whole was quite marked during the season of 1918. A car-load exhibit of fruit grown in Niagara County was shown at a recent meeting in Rochester of the New York State Horticultural Society. One prominent fruit grower in another county which does not have the spraying service remarked that he had heard numerous buyers say that the fruit in Niagara County was the best in western New York, and he could now see, from this exhibit as compared with the fruit in his section, that such was truly the case.

The time has passed when a man should hide his light under his own bushel.

A Simple Rural Vault Closet

In pushing health measures and sanitation in general in rural communities, one of the great problems encountered is the economical and expeditious construction of privy vaults. The concrete vault closet has come into quite common use, and has been modified by the Bureau of Engineering of the Texas State Board of Health by using vitrified sewer pipe. A single closet consists of one 15-inch by 24-inch sewer pipe Y set on a concrete foundation, with the top of the pipe extending slightly above the surface of the ground. On this another 24-inch sewer pipe is placed and the joint cemented. A seat is fastened to the top of the ring pipe. Back of the seat there is a hole about 5 inches in diameter, thru which extends a short piece of sewer pipe with the bell-end up, forming the vent. The opening of the Y branch should be just below the surface of the ground, and should be kept closed by a tight-fitting lid, except when the vault is being cleaned.



DIMENSIONS AND DETAILS RECOMMENDED BY TEXAS STATE BOARD OF HEALTH

Look to the Children!

Rural Development Work Must Include Child Welfare Work

THAT thousands of children in rural and small-town communities are being deprived of a fair chance for normal development is the assertion of the Children's Bureau of the United States Department of Labor in a report just issued on conditions which tend to juvenile wrong-doing in the country.

Causes of Juvenile Delinquency

One hundred and eighty-five New York State children who were implicated in some sort of wrong-doing and who came from 144 different families were carefully studied, and their family surroundings were scanned in an effort to discover what had led them astray. Most of the children were of normal mentality, altho about one-fourteenth were noticeably deficient. But lack of opportunity for moral and mental training, for recreation, and lack of variety of interesting occupations with promising futures led these children of normal mental power into delinquency. All these conditions were found to be accentuated in the subnormal child, who, in addition to the opportunities of a normal child, needs to be provided with some adequate means of diagnosis and appropriate treatment.

The twenty-one New York State communities described show a type of social life that, as the report points out, can "unfortunately be matched in many places." Vivid, detailed descriptions show how the families and communities of these 185 little children failed to safeguard them from early temptations to wrong-doing which will doubtless lead, in many instances, to wasted, stunted lives. Altho in nearly half the cases the child lived in its own home with its father and mother, there was a lack of control on the part of the parents and a disregard on their part for the rights of others which must have contributed to the child's misdeeds.

The attempt is made to analyze the offenses of the children, which range from mere mischief or general waywardness to serious offenses against property and to sex delinquencies. The purposeless mischief



ORGANIZED OUTDOOR PLAY FOR CHILDREN IS IMPORTANT IN BOTH LARGE AND SMALL COMMUNITIES

often develops because the loneliness of the open country and the "deadness" of the little town "give the child a stupid denial to answer his search for sociability." Without wise leadership the youthful energy is all too likely to run the gamut of small mischief and then degenerate into serious misdeeds.



PLAYGROUND APPARATUS GREATLY SIMPLIFIES PLAYGROUND ORGANIZATION

Present Measures Inadequate

What were these twenty-one typical communities doing to save themselves from the moral and financial burden of caring for the misdemeanants their lack of foresight had produced? Prisons for criminals are admittedly an expensive way to safeguard the moral fabric.

In searching for social factors which make for the child's sound development, the investigators looked first to the district school with its honored tradition of useful service. The report shows how "pitifully inadequate" the tiny educational unit in the back country, with its isolation and slight equipment, usually is to meet modern demands. The church, the report states, holds a real and valuable place in the socializing of the country, but it was found to be making most unequal use of its opportunity.

What is there to care for the child who has been called to account by the community for his offenses? The justices of the peace, under whose jurisdiction many of the children considered in the study came, were generally found to give but cursory attention to the children's needs, and to be ill-informed as to how their cases should be handled. Local influence conduces in many instances to leniency where sterner treatment would have been for the child's better interest. The report adds to the evidence which favors a separate court for the treatment of juvenile offenders. The impracticability of securing skilled probation officers and juvenile court judges, however, for each small community leads to the recommendation for a county juvenile court, and the extension of the powers of such courts where they now exist, in order that the court may reach the remotest corners of each county—that "a probation officer may be available in every inhabited section of rural as well as urban communities."

Resolution Relating to Motor Truck Operation

American Road Builders' Association Endorses Figures for Weight, Dimensions and Speed of Motor Trucks

Resolved: That the American Road Builders' Association favors the following regulations of motor trucks on the public highways:

1st. The gross weight of vehicle and load shall not exceed 28,000 pounds on four wheels.

2nd. The total height shall not exceed 12 feet 2 inches.

3rd. The total width shall not exceed 96 inches.

4th. The total length shall not exceed 28 feet.

5th. The total weight per inch width of tire (measured at the base of rubber) shall not exceed 800 pounds.

6th. The speed of motor trucks and trailers, entirely equipped with solid rubber tires, shall not exceed 15 miles per hour, and be it further

Resolved: That the Secretary be, and hereby is, directed to forward copies of this resolution to the governors, state legislatures and the state highway commissioners.

State Farm vs. County Jail

"The University of Another Chance" vs. "The College of Destruction"

By Edwin M. Abbott
General Secretary, American Institute of Criminal Law

TWO men have just "graduated" from penal institutions. One has been turned out of a county jail, the "College of Destruction," penniless, branded as a criminal, abandoned by friends and left to drift, with no outlook ahead but a life of crime, with hope destroyed and ruin assured. The other is leaving the State Farm, the "University of Another Chance," with a smile on his face, money in his pocket, and a good trade with which to reënter the world's marts and resume his proper place in his family. In the one case, cruelty, solitude and punishment have not worked reformation. In the other case, a state liability has been converted into a state asset; a lawless incompetent has been re-formed into a law-abiding, self-supporting member of society.

The consideration of the criminal from a scientific standpoint, more as a dependent of, rather than a menace to, society has been gradually recognized, until to-day, thruout the civilized world, psychologists, penologists and sociologists are putting their shoulders to the wheel, together with the law-making bodies of states and nations, in an endeavor to secure some solution of this problem.

Modern penology has made giant strides in the last decade or two. The probationary period, the indeterminate sentence and parole system, juvenile courts and the employment of compensation of prisoners are but a few of the reforms that have transformed the practice of criminal law from one of mere punishment to one of regeneration and rehabilitation. But the mutations of time have left untouched to a marked degree one of the greatest relics of barbarism extant—the county jail. The history of the county jail is one of idleness, degradation and graft.

What Is the Use of a County Jail?

How many of our county jails are necessary, except as places of detention for those awaiting trial? How many of our county jails are self-supporting? In how many of our county jails do the inmates work at all, and in how many are they kept in complete idleness? In how many are goods for sale produced, and who receives the benefit of the income? In how many of such institutions does the pernicious fee system for the benefit of the sheriffs and keepers still remain? These are the problems to be solved and for which a reform must be recommended.

If one were to visit the county jails as they exist thruout the country, he would become impressed with the utter lack of incentive to do something which prevails among the prisoners. The greatest difficulty encountered to-day is idleness. It breeds discontent, saps the energy and will-power, and destroys all initiative. It encourages disease and fosters crime. Work is therefore the most necessary adjunct to reformation.

In forty-two of the sixty-seven county jails of one state no work whatsoever is done by any of the inmates. In twelve of these institutions, goods for sale are produced, but in only five of these is the legal allowance of prisoners employed. In three of these five, about thirty-five per cent of the prisoners produce goods for sale. Twenty-six institutions employ prisoners in other ways. Some do road work, some assist departments of the municipal governments; but, generally speaking, a great economic force is wasted at the expense of taxpayers and the loss of manhood on the part of prisoners.

What is the solution of this evil? The only way to reform the county jail is to abolish it. The whole system is founded on an error. Malefactors transgress the laws of the state and the nation. They are, consequently, either state or federal prisoners. The machinery of the law which convicts them is a branch of one of these governments. District attorneys may be locally deputized to represent a certain district, but they represent the sovereign power. Therefore, convicts should be sentenced to

serve their time, when a sentence is necessary, in a state or federal institution.

Value of the State Farm

To convict these prisoners is expensive. Taxation supports the institutions where they serve their time. The cost of up-keep and maintenance should be shifted to the transgressors. They should be made to return to the state, thru profitable labor, some proportion of the cost attending their arrest, conviction and incarceration. The solution of this problem, therefore, is the state farm. This affords an institution where all prisoners physically capable are employed at some useful occupation. The products of their work should inure to the benefit of the commonwealth. First of all, the county or the state could be reimbursed for the costs of prosecution; secondly, the state or county should be reimbursed for the daily cost of maintenance of the convict. This is easily ascertainable, for there is hardly a penal institution in the country to-day which cannot tell what it costs per capita to maintain its prisoners. These costs should be apportioned weekly from the income of the convict or considered in adjusting his wage. A fair payment should be made to the prisoner for two purposes: first, to support his dependents outside, and secondly, to establish a fund which he will receive at the expiration of his sentence.

To devise a proper method for the support of the dependents of the convict it should be necessary for such dependents to secure an order from the court wherein sentence was imposed. Instead of a specified sum, the order should designate a fractional proportion of the weekly or monthly earnings of the convict. In this way, something will always be left toward establishing the bank account to be turned over to the prisoner at discharge. When this order is authorized, a certified copy should be sent to the officials of the state farm and there kept on record. Payments should be made to the proper officials in the home county, for the dependents. This system would effectually solve the problems of desertion and non-support, and open the door for a way to compel husbands to support their wives and families. At the present time these delinquent husbands are supported by the state, which provides for them in costly institutions, while their dependents are thrown upon charity or supported by Moth ers' Pensions or some other system. Suc men must be compelled to work and sup port their families, even if within prison walls; and once having felt the majesty o the law, they will more easily be persuade to fulfill their obligations upon release.

The inmates of the state farm can be em ployed at various occupations. "Stat Farm," after all, is but a name. Upon th farm all manner of food and dairy pro ducts can be raised. In buildings erecte for the purpose, manufacturing of clothin furniture and other necessary materia could be carried on. The state printing fo the Government and dependent institution could be done there. The scope of wor would be limited only by the requiremen of the different branches of state gover ment. The various trades, such as plum ing, bricklaying, stone-masonry, plasterin and the like could be taught. For th women, sewing, knitting, carpet-making an other useful employments could be fo tered. In this way, everyone could be give an opportunity to be usefully employed, an thus to take his mind off himself. I this method, at the end of a day's wor the body, being physically spent, will see rest instead of turning in idleness to devi ish methods to employ the spare time.

There must be no contract labor syste Such a system means low wages and th open door to fraud. There must be limite employment upon the highways, where th prisoner may be subjected to the scorn an mockery of the public. The widest latitud however, should be given to employment the open air. Farming, horticulture, flo culture, can be encouraged to the fulle extent; and with the erection of hothous this system might be conducted not only the outdoor season but thruout the wint months as well.

All institutions dependent upon state ai whether they be colleges or government institutions of varying character, should be compelled to become subject to a la requiring them to secure their supplies fro the state farms. Thus a system of coöper tion would be established. Life in the ope air would improve the physical conditio and morals of the inmates, and the educ tional effect in contributing useful occup tion would in most cases create the ince tive for better living. The state itself wou

thus benefit by the results accomplished, as with the advent of prohibition the population of our penal institutions would be reduced, and by means of the above-mentioned reformative measures the status of those remaining in institutions would be raised to a much higher plane.

Therefore, the key to the whole situation is the state farm. The class of prisoners to be sent there is immaterial. Whether they be for short term or long term, is a matter for future determination. The necessity to work means a change for regeneration. The need is so great that it must be worth while to give this system a fair trial.

The most beneficent results of this whole procedure would be that the convict would be better equipped for liberty and educated to become a law-abiding citizen in that he would have learned a self-supporting trade or occupation, he would have funds with which to start life anew, would have held his family together thru the term of his incarceration, and would be ready to go back and resume his place not only in his family but in the citizenry. The state would have been benefited in reducing the cost of punishment to a minimum, while at the same time molding rough human clay into useful, happy human beings. Organized labor would be benefited by the development of well-trained and well-skilled artisans, and the community as a whole would see a reduction of crime, and a reëstablishment of usefulness among a class of citizens who had heretofore been charges and parasites.

Hot Lunches for Rural Schools in Minnesota

By Mary Margaret Muckley, R. N.
Director of Public Health Nursing, Minnesota Public Health Association

CITY schools have quite generally taken up the question of providing hot lunches for pupils, but this very important feature of health work has been generally neglected in rural communities. In Minnesota, however, in some of the progressive rural school districts, frozen or hastily eaten lunches will shortly be a thing of the past. School lunches have frequently been a topic of discussion at the Farmers' Club meetings, but with the rapid adoption of the hot lunch system these discussions also may be relegated to the past.

Practically all the rural districts are now making provisions to purchase kerosene stoves and hot-lunch apparatus. This has been a long time in coming. The farmers' wives have lamented, usually without avail, that their children, whose health and advancement mean just as much to the nation as the welfare of city children, have been obliged to eat lunches which had frozen on the way to school and which in many cases remained frozen until the lunch hour. They had also asked that the teacher be given supervision of the lunch hour, so that the children would discontinue "swallowing their food down plain." Many of the County Commissioners were willing to provide warm food for their pigs and cattle, but had not reached the point where they appreciated the necessity for providing hot lunches for school children, who, thru no fault of their own, were obliged to eat their noonday meal several miles distant from the hot dinners of their parents. It must be remembered also that the noon dinner is the farmer's most important meal, and it cannot be reasonably expected that a child will grow strong or remain in a healthy condition when his most important meal is a frozen one, or, quite as often, inadequate.

Educating the Public

Thru the efforts of the Minnesota Public Health Association a nurse has been employed to address farmers' meetings on this topic. Her success has been due primarily to the simplicity of the problem and her earnestness in discussing it with the farmers. She has heartily endorsed all that has been said in favor of hot lunches. She has shown that they do not necessarily mean the serving of an entire hot lunch, but often just the serving of one hot food. This may be cocoa, creamed soup, baked potatoes, a creamed vegetable, rice or any food which can be prepared with a kerosene stove outfit. The articles of food necessary for the lunches may be bought by the school

board, or the families in the school district may take turns in supplying them, or may supply them on a coöperative basis. This can be done at a very small cost,—at least to the parents,—and the benefits to the school children are manifold.

The Plan Is Tried

In one case, after much hesitation on the part of the school board, it was finally decided to give the project a trial, and a kerosene stove equipment was installed in the schoolhouse. The plan was an immediate success. The pupils in this particular district consisted of thirteen boys and one eight-year-old girl. Contrary to their usual habit, the boys became intensely interested in the preparation of hot lunches. They helped prepare the lunch, washed dishes, and moreover called it all fun. Every Friday their teacher wrote out the menu for the following week on the blackboard, indicating what each pupil should donate. To show how eagerly the boys looked forward to their hot lunches and to preparing them, the following incident is of interest.

The boys became so troubled over the prospect of missing hot lunches for the week following Christmas vacation that one of the mothers, in order to quiet the anxiety of several boys in her immediate neighborhood, drove to the teacher's house and waited until the teacher had prepared the menu, so that the boys would not be disappointed and would not have to go without their hot lunch for even one day.

Very unique and pleasing experiences have been met with in visiting some schoo where the serving of hot lunches has b come a gratification to the teacher and pleasure to the pupils. In one district th teacher had labored very hard to secure ho lunch equipment, and after it was secur the school district surely had ample reas to express thanks. The school board pr vided paper napkins, and plate, cup, spo and fork for each child, as well as the di towels and certain of the staple groceri The milk, eggs and vegetables were fu nished by the families in the district, wh also took turns keeping the dish towe clean. Four pupils each week took char of the lunch and the dishes. There were cook, an assistant, a porter and a wait and these four prepared and served t meal. Each pupil had an individual tab with his own table-cloth, which was a pap napkin, and his own dishes set proper for setting the table and table etiquette l came part of the curriculum with the a vent of the hot-lunch equipment. (cold days two hot dishes were served. (a particular day when the nurse and cou superintendent visited the school, they we served with hot cocoa and macaroni a cheese, happily cooked and smilingly serv by the four little managers.

Not the least of the good effects of t hot-lunch system is the interest it arous in boys and girls to know the values of t food and the correct manner of eating. N only are their chances for good health a preciably increased by the hot lunches, b they are gaining other valuable knowled



THE FIRST RURAL PLAYGROUND IN NORTH CAROLINA, IN INDIAN TRAIL, UNION COUNTY—A PRODUCT OF COMMUNITY SERVICE LEAGUES

FORWARD STEPS
REPORTED TO THE AMERICAN CITY
BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

MAYORS

Preventing the Tearing Up of New Pavement

CLEVELAND, OHIO.—One of the most aggravating troubles of a street commissioner and one of the problems in street pavements most annoying to property owners and tenants is the rapid destruction of new pavement, not by the ordinary wear and tear of use, but by continual digging by public utilities for the purpose of making new service connections to residences or stores. Progressive communities have grappled with this problem for many years, but largely in vain. In most cities it has come to be taken for granted that a new pavement will be cut up soon after it has been finished, to allow for individual house connections which could just as well have been laid prior to the laying of the new pavement, if only the prospective builders had given sufficient thought to it.

Cleveland has adopted a very effective solution of this problem. Municipal ordinances place a restriction on this indiscriminate cutting of new pavement. Sometime previous to the commencement of paving on any street, signs such as are shown in the accompanying illustration are posted conspicuously along the street giving due notice of the work which is contemplated and requiring all underground connections to be placed before the paving is done. Furthermore, it is provided that after paving has been laid it shall not be cut for the purpose of making house connections for a period of five years, thus keeping the pavement intact for this time.

HARRY L. DAVIS,
Mayor.



THE WARNING SIGN THAT AIDS CLEVELAND TO PRESERVE NEW PAVEMENTS



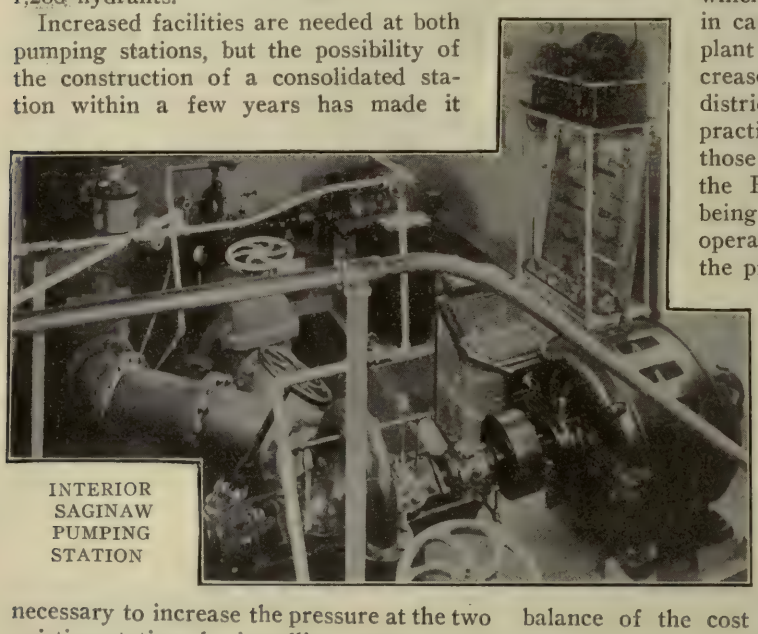
AN UNBROKEN BRICK PAVEMENT ON A CLEVELAND STREET

- WATER - DEPARTMENTS

Salvage Values Considered in Emergency Construction

SAGINAW, MICH.—Owing to peculiar conditions, it has been necessary for the water department of Saginaw to resort to emergency installations to increase the water pressure thruout the city. Because of the consolidation of two cities, each of which has a water plant built in 1872, to form the present city of Saginaw, there are now two pumping stations, which directly supply 135 miles of water main, with 1,200 hydrants.

Increased facilities are needed at both pumping stations, but the possibility of the construction of a consolidated station within a few years has made it necessary to increase the pressure at the two existing stations by installing pumps which can be readily salvaged when consolidation takes place. This question has been before the people several times, but on each occasion it has failed in the necessary three-fifths vote for a bond issue. About a year ago, when the question of pressure became serious and the water department realized that it could not secure the necessary vote for a bond issue, steps were taken to install emergency electric pumps at both stations to increase the pressure.



INTERIOR SAGINAW PUMPING STATION

At the East Side station it would have cost something over $200,000 to increase the size of the force main, which supplies 80 per cent of the consumption from t station. This main would have to be vaged in case of a change in the locatio the plant, so a new auxiliary station c sisting of two 3,000,000-gallon centrifu pumps, each driven by 125-H. P. elec motors, was constructed on the river b near the point of maximum consumpt Immediately after it was placed in ser the problem of pressure was solved for t district.

The situation at the West Side was so what different. The existing pumping tion is at the center of distribution, but pumping equipment in the station is adequate to provide the necessary press and to rebuild it would involve consi able expense for material and construc which could not be salva in case a new consolid plant were built. To crease the pressure in district, electrical pu practically identical v those recently installed the East Side station being purchased. W operated, these will incre the pressure in this dist about 50 per cen

The entire expe of both installati amounts to ab $55,000, of wh $13,000 is for wa mains, which wo have to be laid any case, and i figured that terial represent about half of balance of the cost can be salvaged used in the construction of a new c solidated plant.

R. F. JOHNSON, Commissioner of Light, Water and Sewe

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A Municipal Ice Plant

OMAHA, NEB.—After authorization the State Legislature, the city of Om drew up plans and specifications for construction of an ice plant, to be b south of and in conjunction with the P pleton Avenue pumping station. F necessary lots were purchased and c tracts were let for building and machin by the end of 1917.

This plant was con-
ucted out of the earn-
gs of the Metropolitan
ater District, which
erates the water plant
Omaha, and material
ing was effected by
lding it next to one of
pumping stations.
e ice plant has a ca-
city of one hundred
ns of ice per day, and
connection with it an
house is being built,
ich will be capable of
lding 9,000 tons of ice.
is will enable the
nt to operate ten
nths of the year and
ll afford two hundred
ns or more of ice per
y during the summer,
is practically doubling the effective ca-
city of the plant and making it pos-
le to serve a much larger number of
milies.

During 1918, ice was sold to the general
blic at a rate of 30 cents per hundred
unds thru sales stations, and most of the
les were in 5-cent and 10-cent amounts.
o ice was delivered at the homes, but the
les stations were located in the thickly
ttled districts and enabled many people
obtain ice who had previously been
liged to do without—a very serious con-
on in such a crowded section of the
y.

On account of a shortage of ice in the
y, the plant was opened before comple-
on and operated in part capacity. It re-
ved a great deal of suffering, and pre-
nted an increase in prices by the private
mpanies. Altho the plant at present is
ilt to supply only a small portion of the
e used in the city, it has proved itself of
eat value to the poorer classes by en-
ling them to get ice at any time they
nted it and get it at a price which they
uld afford. While it is impossible to
ve figures at present, the city is fully sat-
ied with the success of the undertaking,
th because it is of general benefit to the
blic and because it is being operated so
to make a good showing from the finan-
l point of view.

F. P. LARMAN,
Acting General Manager, Metropolitan Water, District.



DEMONSTRATING WINNIPEG'S NON-FREEZING STREET TAP

Non-Freezing Street Tap

WINNIPEG, MANITOBA, CAN.—On account of the very rapid growth of the city of Winnipeg, it was almost impossible for local improvements, such as sewers and water-mains, to keep abreast of the building activities, especially so where owners built on isolated lots. To serve these people with water, Winnipeg introduced a system of free taps on streets where mains had been laid.

These taps are placed near the outer edge of the sidewalk; and as the connections are kept at a depth of 7 feet, 6 inches below the street level, it necessitated a key about 10 feet long to operate the stop and waste cock. The riser for the discharge of the water was straight pipe, with a branch to discharge into pails. It was found almost impossible to prevent taps from freezing when the temperature dropped below zero, preventing the people from getting water.

To overcome this trouble the writer designed a new style of street tap which has stood the test and which did not suffer in the slightest last winter from effects of the frost when the temperature went as low as 25 degrees below zero. The principal feature of this tap is the quick discharge and the easy drip, which allows the pipe to drain quickly, the whole being protected by a frost jacket. The discharge is controlled by a push button in top of tap.

THOMAS H. HOOPER,
Operating Superintendent, Water-Works.

- HEALTH - DEPARTMENTS

Work of Newark Venereal Disease Bureau

Newark, N. J.—For the purpose of assisting the army and naval authorities to control the spread of venereal disease, the Newark Department of Health established a Bureau of Venereal Disease on July 1, 1918. This Bureau was given charge of the various venereal disease clinics conducted by the City Dispensary under the direction of the Department of Health. A director of the Bureau was appointed, a physician who is a specialist on venereal diseases, and the physicians who conduct the Dispensary clinics were assigned as his assistants. Two social workers were attached to the Bureau, a graduate nurse and a man speaking Italian. The City Commission made venereal diseases reportable to the Department of Health.

Since July 1, 890 cases of syphilis were brought to the clinics, male and female. Some patients came week in and week out. Cases of gonorrhoea brought to the clinics for treatment and supervision numbered 983. We have had since that time upon an average 4 to 6 new cases per week of each disease.

This Bureau has had the active coöperation of the police, who have brought in 186 suspected women, of whom 12 were positive for syphilis and 7 for gonorrhoea. Other cases brought into the clinics included those sent by the Federal Government, of which 6 were found positive for syphilis and 1 negative. Other cases sent in included 2 from the Red Cross and 53 sent from the hospitals of the city.

The work of the Bureau so far has met with very encouraging success, and we have been enabled by reason of the disease being reportable to follow up many cases where medical instructions were not properly carried out. The New Jersey State Law on Venereal Disease, Chapter 253, gives local boards of health very considerable power to supervise cases brought to their attention by the army and naval authorities. The greater number of cases submitted to this department by the police are those which have been brought to our attent by the army and naval authorities.

A publicity campaign is being carried by means of the sanitary inspectors, w place in public toilets and other places tices of the clinics held in the Departm of Health, which are free to those una to pay for a physician. At the same ti warning is given against the misstateme of quacks, and if any such literature found on these premises the sanitary insp tors remove it at once. Special clinics held for gonorrhoea and syphilis, and woman physician is in attendance on cert days. We feel that the focusing of pub activities upon this problem will at last able us to evolve some definite solution the control of venereal diseases in our co munity.

CHARLES V. CRASTER, M.D.,
Health Office

PUBLIC SAFETY - - DEPARTMENTS

Philadelphia Combines Police and Fire Stations

Philadelphia, Pa.—The new Pub Safety Building, to be erected at Twen fourth and Pitner Street, Philadelphia, w include a police station, an engine and tru house, a boiler house and a stable. All to the buildings will cover a tract of 35,0 square feet. They will be of colonial desig as shown in the accompanying drawi and will be constructed of red brick wi limestone trimmings.

The police station, which is to be at t Ritner Street end, will consist of two stor and a basement and will measure 36x98 fe with a wing 30x63 feet. The first floor w contain a reading-room, a large assemb room, a lounging-room and suites for t lieutenant, desk and street sergeants. C rooms for both men and women will al be located on the first floor. The seco story is to contain the dormitories, sittin rooms, lockers, wash-room and toilets. the basement will be the game rooms and large place for storage.

The firehouse is to be located at the Wo Street end and will contain accommodatio for a fire engine and truck. On the seco floor there will be dormitories, showers, a other facilities for the comfort of the men



THE PROPOSED COMBINED POLICE AND FIRE STATION AT TWENTY-FOURTH AND PITNER STREETS, PHILADELPHIA

In the center of the lot and between the two ildings is a one-story stable 31x91 feet, ith a wing 31 feet square. This contains stalls, a mounting-room and store and rness room. This building is connected th both the police station and the fire use by a brick colonnade, thus making an namental group. The boiler house will placed behind the stable.

Exclusive of the grounds, the cost of the ildings is estimated at about $406,000.

WILLIAM H. WILSON,
Director of Public Safety.

PUBLIC WELFARE - AND SERVICE -

Market Department Reorganized

NEW YORK, N. Y.—The city of New rk is buying and selling produce thru e Department of Markets, but that is ite a minor matter compared with the big ue of getting an open channel between oducer and consumer, which the proposed rket program attempts to make possible. We have been buying and selling produce out a year. All told, we have bought and d about $250,000 worth of various arti- s—eggs, butter, potatoes, etc. We have ittle retail store in the twenty-third floor the Municipal Building, where the em- yes of the city and inhabitants of the y generally can drop in and purchase ch items as coffee, tea, some canned ods, butter, cheese, eggs, sugar and the e. We have just finished distributing 7,- cases of eggs, which are carried in d storage. These were sold retail to nsumers after they were candled. Only e Grade A eggs were sold to the ultimate nsumer. Sub-grades and cracks were d to bakeries and the like.

We have this power thru a grant from e State Food Commission of the State of w York, which was a war commission. I have made a request to the Legislature to enact a law giving power to any city in the state to buy and sell food, fuel or ice when, in the opinion of the officers of the municipality, such action is necessary. We may have started something in New York City that will be of far-reaching influence in the matter of cost of living to people in the future. At least, this is taking a step toward the goal of putting the producer and the consumer in direct contact, and allowing the consumers to buy collectively, in such a way as to reduce prices.

In February, 1918, we asked and secured from the Board of Estimate and Apportionment authority to establish the following four divisions in the Department of Public Markets:

1. *Division of Production and Transportation.*—This division has to do with surveys of the country, making a study of food production in various localities of the state and the country which now supply, or might be used to supply, the needs of New York City; a careful study of the way food is brought to the city of New York—by what railroads and over what water routes; what use is made of express and parcels post.

2. *Division of Physical Plant.*—This division has to do with the markets now in existence. The up-keep and enlarging of these facilities and the selection and acquirement of additional grounds for markets in the various boroughs is a task for this division.

3. *Division of Distribution.*—Whatever purchase and sale of food is made by the city, thru the Department of Markets, will be handled by the Division of Distribution. This division may grow to be a great department in itself in a few years.

4. *Division of Information and Conservation.*—This division deals comprehensively with information on foods of all kinds, with substitutes, conservation meth-

ods, educational propaganda, development of groups for intelligent and thoughtful consideration of the whole food problem. An educational program stimulated thru the public schools, thru clubs, labor unions and every possible way will be used by the Division of Information and Conservation to encourage economy and thrift and the saving of food, and the necessity of maintaining a high standard of physical living among all the people.

What we are aiming at is a comprehensive terminal market scheme, with adequate provision for railroad connections, yards, storage, and market space, in each of the five boroughs of the greater city. These terminal markets, we expect, will be equipped with platforms for freight cars, large elevators, refrigerating facilities and canning and conserving departments for perishable fruit not immediately sold.

This is the program which Governor Alfred E. Smith of the state of New York has endorsed and stands for, and this is the policy which the city is working to develop.

JONATHAN C. DAY,
Commissioner of Markets.

City Scales Insure Full Weight

Altoona, Pa.—In the city of Altoona, the merchants take great pride in their scales, and few cities of similar size have as many costly and up-to-date scales and measuring devices. The merchants are always ready and willing to coöperate with the Inspector in case he finds a faulty scale. It has been necessary only to call their attention to the fault to see that the defect was remedied.

We make one annual inspection, visiting every place where scales or measures are used. Subsequently we make a reinspection of faulty scales, and, when it is necessary, condemn or confiscate any scales or measures. In almost every case, when this second visit is made we find that if the scale was faulty, a new one has taken its place or else is ordered and on the way. The past year it was necessary to condemn and confiscate only 49 pieces. In a city that has possibly 900 stores and a large market we think this is a very creditable record.

We have within a radius of possibly six miles eight or nine coal mines, and during the last year or two, when there was very little coal shipped on the railroad, 90 cent of the coal used in this city hauled from these mines. Only two them have scales, so all other coal was by guess. The city purchased and put operation December 12, 1918, a 20- scale. We now weigh every ton of that comes from the mountain and deli to every dealer a duplicate weight bill, for himself and the other to be delive to the purchaser. This plan will elimi all guesswork and will guarantee to e purchaser 2,000 pounds for every ton.

W. B. DUNN,
Inspector Weights and Measure

HARBOR DEPARTMENTS

Portland Continues Dock Improvements

Portland, Ore.—During the last two three years, practically all of the port provements which have been undertake Portland have been provided by the mun pality, as are most of the additional facilities which are contemplated at time.

With part of the proceeds of the 000,000 bond issue authorized in June, 1 the Commission of Public Docks is completing a 1,000,000-bushel fire-pr grain elevator and a pier 1,200 feet length and 220 feet in width, covered w a transit shed 180 feet in width for the length of the pier at the St. John termi for which a site containing 150 acres acquired in 1917. A short article deal with this proposed municipal grain eleva and terminal appeared in The Americ City for October, 1917, page 341.

In November, 1918, the voters of the of Portland authorized the Commission issue and sell port development bonds in amount not exceeding $5,000,000, wh with the amount previously authorized not expended, leaves at this time availa for additional port facilities the sum about $6,000,000.

Appreciating the necessity, not only providing adequate shipping facilities meet the demands of the expected incre in the port's waterborne traffic, but also desirability of undertaking public works as large a scale as possible during

reconstruction period, the Commission has ordered the immediate preparation of plans and the letting of contracts for the construction, at the St. John Terminal, of another pier, 1,500 feet in length and 250 feet in width, which will temporarily be used as an open pier for the handling and shipping of bulk freight, such as lumber, structural steel, oils, etc. The pier which has just been completed will be lengthened 300 feet, with transit shed, giving it a total length of 1,500 feet. These improvements are estimated to cost $801,224. The slips of this terminal are 280 feet wide and are dredged to a depth of not less than 30 feet at low water.

The Commission has also authorized the preparation of plans for a 12,000-ton floating dry dock, with the intention of proceeding with its construction at an early date. The cost of this dry dock is estimated to be about $1,000,000, exclusive of shop buildings and machinery.

In addition to the above described improvements, the Commission has under consideration the provision of the following facilities for the port: floating ship repair plant; floating ship coaling plant; coal and fuel oil storage facilities; and vegetable oil storage. It is planned to have these facilities in operation by the time that they are reasonably sure of being needed.

The municipal terminals are well supplied with freight-handling facilities, but the Commission is fully alive to the necessity of providing the most modern and efficient mechanical equipment to insure the expeditious and economical dispatch of vessels, and for this purpose it is preparing to install such modern machinery at the St. John Terminal piers as will give vessels the quickest possible dispatch.

The coaling facilities of the port are being greatly increased by the construction by the port of Portland of a 10,000-ton coal storage dock and handling machinery for the loading of barges for bunkering vessels while at berth loading or discharging cargo, and a private firm is preparing for the construction of a direct ship bunkering and coal storage plant.

The Commission has already three docks in operation, with a total berthing space of 7,385 feet, and by private parties and railroads an additional water frontage of the port of over four miles has already been improved.

The total amount of bonds authorized by the voters of the city for port improvement is $10,500,000, of which about $4,500,000 already has been expended.

G. B. HEGARDT,
Engineer, The Commission of Public Docks.

PUBLIC WORKS DEPARTMENTS

Irvington's New Jitney Ordinance

Irvington, N. J.—The Board of Commissioners of the town of Irvington recently enacted an ordinance for the regulation of automobile omnibuses, defining "auto bus" as any vehicle carrying passengers for hire which indiscriminately accepts or discharges such persons as may offer themselves for transportation either at the termini or at points along the road on which it is to be used.

The ordinance requires that the owner of the auto bus must secure a license from the Board of Commissioners. In his application must be indicated the estimated capacity of such bus, the route over which it is desired to be operated, and all the usual data as to the identity and responsibility of the owner. From the issuance of such license and the payment of the fee therefor ($25), payable semi-annually, it shall be allowable for the owner or his duly authorized agents to operate the bus, provided there is placed prominently upon it a placard to be issued by the Commissioner of Streets, giving the number of the license and the route for which the license has been granted, together with the fare to be charged in all cases where such fare exceeds 5 cents. No bus may be operated while any person is standing upon the running board or other parts not intended for a greater number of passengers than the number stated in the application. No fares may be collected upon the bus while it is in motion. Among the stringent provisions of operation are the following:

Any driver who shall smoke and strike matches while operating an auto bus shall immediately forfeit his right to operate.

No auto bus shall park within the limits of the town at any other places than those designated by the Commissioner of Streets.

Passengers may be taken on and discharged only at the curb line.

Stopping on the right in order to get passengers will not be tolerated.

The Commissioner of Streets is authorized, upon a written complaint of a violation of these rules, to hear the complaint, take evidence and, if he is satisfied that the regulation has been violated, to forbid the owner or the driver to operate the bus for a period not to exceed one week.

Disobedience of these regulations or orders shall result in the forfeit of the right to operate until the Board of Commissioners definitely reinstates the offender.

HARRY J. STANLEY,
Commissioner of Public Works.

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How a Municipal Bakery Helps City Institutions

New Orleans, La.—A novel enterprise has recently been undertaken in New Orleans, namely, the operation of our municipal bakery. Our output is from 800 to 1,000 loaves per day. We furnish the House of Detention, the Parish Prison and the White and Colored Waifs' Home with an ample supply of bread, equal from every standpoint to that supplied to the householders of New Orleans by private bakeries.

The machinery cost $1,110. Including freight and installation, the bakery cost the city $3,719.67. Counting material, labor, electric current, replacement fund, etc., our bakery turns the bread out at a cost of 5 cents per pound. This bread would cost the city 8 cents per pound at wholesale. The above expenses, however, do not include rent, delivery charges or the wages of a third man, who is a prisoner. The baker and his assistant are paid $70 per month each. They think, however, that they are entitled to better wages, and in all probability we will soon have to increase their wage. Our flour consumption for the first six months of 1918 was about 16,000 pounds per month, and that quantity will be about our average for some time to come, unless conditions change.

Without such data it would, of course, be impossible for any one to determine from the purely material standpoint whether or not it is advantageous to operate a municipal bakery. But above the mere saving of money was the conviction that we could always have a good supply of good bread, made of good flour and well baked, that led us to break away from the old system of contract with private bakeries for furnishing our institutions w bread. Moreover, the contract system w becoming daily more and more trying, u satisfactory and undependable.

Long contact and association with de licts, young and old, shows to us conc sively that a good supply of good bre has as great an influence upon their a tude towards life, their conduct and re tionship towards each other, and appare ly their moral reflections, as a good s mon, and we do not undervalue a g sermon or its effect upon our outcasts getting them to take hold again and st life afresh. We believe that a municipa owned and operated bakery for the purp of supplying such institutions as we h mentioned would be to the interest of ev municipality, even if operated at a fin cial loss. Nothing is so detrimental to operation of any institution of a reform tory, penal or eleemosynary nature as supply of poor bread. The physical a mental ills produced by the eating of sog unnutritious bread, outnumber those, in opinion, that result from all other cau combined.

ALEX PUJOL,
Deputy Commissioner of Public Property, Divisio of Public Buildings.

CITY CLERKS

A New Municipal Garbage Ordinance

Walla Walla, Wash.—Thru the öperation of The American City w the Health Department of Walla Walla new set of rules and regulations regard the storing and collection of garbage w prepared and passed on the 27th of cember, 1918.

The salient features of the new o nance are:

1. It is unlawful to deposit any kind rubbish in any stream flowing thru city.

2. All shavings and other combusti material must either be removed from buildings or baled. This refuse will taken away from the premises by the c the actual cost of the removal to be p by the occupant or owners of the buildi

3. The City Commission fixes a sched

f prices for the collection of all rubbish y the city and prepares rules to govern ıe deposit and collection of rubbish.

4. Owners and occupants of premises are equired to prevent rubbish from blowing round or accumulating in a manner to ecome offensive or to increase the fire azard.

5. Ashes may not be deposited in any reet or alley without permission.

6. Ashes may not be deposited within ten eet of a wooden structure or in a com-ustible container.

7. In residential districts owners and oc-ıpants must provide suitable containers of ot more than 30-gallon capacity to re-eive ashes, tin cans, and all non-com-ustible food containers, the city to remove ontents without charge, provided the uantity is not in excess of 30 gallons per eek. If receptacles are placed in an in-ccessible place, owners or occupants are equired to pay the cost of extra work for emoval.

8. The deposit of glass, tacks, nails, etc., hich might injure automobile tires is for-dden.

9. The burning of leaves, brush, etc., on ıe pavement of sidewalks is forbidden.

10. All receptacles for waste likely to ause fire by spontaneous combustion must e made of non-combustible material.

11. Whenever the city has removed trash nd other rubbish and the owner or occu-ant of the premises owes money to the ity for this service, the charge shall con-itute a lien against the property. Proper uthority and procedure for action against wners or occupants failing to pay are also rovided in the ordinance.

FRED G. WILLS,
City Clerk.

PARK DEPARTMENTS

Making Municipal Park Refectory Service Pay

MINNEAPOLIS, MINN.—The refectory ervice in the parks of the city of Minne-polis has been operated under the direct anagement of the Board of Park Com-issioners since 1909. Before that time ıe concessions were sold to the highest bidders for periods of one, two or three years, the amounts received varying. For 1908 the sum of $3,700 was paid.

Park Superintendent Theodore Wirth, in his 1907 report to the Board after two years of experience with the concession-ers, recommended in the following mes-sage that the Park Board undertake the operation of the refectory service as a part of the functions of the department for the benefit of the public:

"In my opinion, refectories should be con-ducted along very simple lines, more like dairy lunch rooms than regular restaurants. With the exception of soups and hot drinks, there should be no hot meals served. After a park board introduces establishments in the parks it becomes just as much the board's duty to see that the public is served well, and at the lowest possible cost, as it is the board's duty to keep the lawn, roads, walks, woods or any other feature designated for the public use and comfort. The parks are not here for the purpose of making money for park boards or individuals, but for the service of the public."

The Board approved these recommenda-tions and advised the concessioners that the service would be taken over the fol-lowing year. Their old equipment was purchased at a cost of $7,327.74. The first year's gross sales amounted to $44,328.50, and the profits were $10,396.37, leaving us a net profit of $3,028.63 after paying for the equipment. The business has been in-creasing steadily from year to year until the gross sales for 1917 amounted to $92,-358.40, with a net profit of $13,763.19, after paying all expenses incident to the main-tenance of the buildings.

The Minnehaha Falls refectory, which is the largest, is in operation from April 1 to October 15, and supplies the most varied service—café, fresh buttered popcorn, can-dies, home-made taffy, cigars, soft drinks, ice cream cones, sundaes, sodas, kodak films, souvenirs, souvenir post cards, etc., a kitchen with free gas service for picnic parties, and a parcel checking service for five cents.

The Lake Harriet refectory and roof garden is open from May 1 to September 1. The Minneapolis municipal band fur-nishes free music here for a period of eight or nine weeks during the summer. There are also water sports, boating, ca-noeing, etc. The Board operates two elec-tric launches, making thirty-minute trips around the lake for a ten-cent fare. The re-



BATHING IN LAKE CALHOUN, MINNEAPOLIS



MINNEHAHA FALLS, IN ONE OF THE MINNEAPOLIS PARKS



LAKE HARRIET REFECTORY AND ROOF GARDEN, MINNEAPOLIS

freshment counters are similar to those enumerated at Minnehaha Falls, with the exception that a cafeteria service is in operation. They have no waiter service of any kind. This place is well patronized and appreciated by the public.

Smaller refreshment counters are operated at the bathing beaches, the public golf course, the gateway building and smaller parks in winter where necessary, to accommodate the crowds.

The present manager has been in charge since 1910 and has full charge of the employment of help, subject to the rules of the Civil Service Commission. He does all the purchasing of supplies for the entire refectory service. Bills are audited by the Park Department and paid thru the regular monthly city budget system, except such as are subject to a cash discount for prompt payment. This latter item should not be overlooked. It did not take me very long to discover that many of the larger jobbing houses, wholesalers and manufacturers did not care to do business with us on account of the usual slow method of paying city bills thru the monthly budget system. I found that we could save considerable money by taking advantage of trade and cash discounts by prompt payment of bills. Special arrangements were made with the City Treasurer, who set up a revolving fund for us, and we are now saving many hundreds of dollars annually. Other city departments are now working under similar arrangements and saving money thereby.

What are the results? Superintendent Virth's message to the Park Board in a late report gives the answer:

"It can be said that the service has increased in efficiency partly thru betterment in equipment and desirable changes in arrangement of the buildings, and to a great extent, thru able and economical management and the employment of a good class of help. That the service given under the management of the board is better than that given by the lessees, I believe no one will deny. That the financial returns to the board are also better than those obtained under the leasing out of the concessions is an additional gratification, but the greatest satisfaction must be found in the fact that the public is given clean and reliable goods at reasonable prices and that the revenue secured by the board thru this service is again used for the benefit of the public in place of disappearing into the coffers of speculating lessees."

Is it a success? With conservative business management—no political jobs—good goods at popular prices, no unfair competition with legitimate business, a fair profit can be made. Our sales are increasing every year, requiring additional equipment and facilities to serve a growing patronage, which we believe is the best recommendation that can be given for the service rendered.

Our motto is "Enjoy Your Parks."

CHARLES O. JOHNSON,
Manager of Refectories, Park Department.

- CITY - ATTORNEYS

Diversified Improvements in Zanesville

ZANESVILLE, OHIO.—It is incumbent upon those of us at home to see to it that our own community is a safe, comfortable and modern place for the boys who have been fighting overseas to live in when they come back. Sanitary cities, pure water supplies, armories, paved streets, improved roads, Y. M. C. A.'s, and kindred improvements and institutions will be due our men in the service when they return. If we can make some progress along this line prior to their arrival home, so much the better.

If the war had continued even one more year, it would have involved an expenditure of billions of dollars. If it had continued for several years longer, the cost would have been incalculable. The early termination of the struggle means an enormous saving. By using only a small portion of this saving in civic and public improvements, we can make our communities modern and attractive in many ways. We could well afford to expend for improvements all the money that would have been spent for the war during the year 1919. Civic improvements and public works will help the returning soldiers to a job. We must not underestimate the importance of seeing to it that every man who returns from the service is able to secure employment. We should like to see the Government enact legislation looking to the improvement of every main market road in the United States. Some of the things that the city of Zanesville is doing along these lines of civic improvements are as follows:

A new water-works is practically completed, involving an expenditure of $435,000. It is a ten-million-gallon air-lift well plant. Twenty 10-inch wells were drilled. The supply from these wells should prove inexhaustible, for the reason that the wells are in close proximity to the Muskingum River, the water from the river filtering thru to the wells. As the water is absolutely pure, the elimination of typhoid and other water-bred diseases is assured. The plant will be built within the appropriation provided, and the amount of extras is less than 2 per cent of the contract price. City water rates have been increased 25 per cent because of increased costs due to the war.

A combination city hall and market house building is now in course of construction and will be ready for occupancy by July 1, 1919. The cost of this building is $100,000. A new armory, to be built at an expenditure of $55,000, is in process of construction and will be ready for acceptance from the contractors within a few months. It will be equipped and ready for use by the time the boys are home from overseas, and the building will, of course, be of special interest to all men who have been in the service.

The citizens have a fund of $200,000 for a new Y. M. C. A. The site has been purchased, plans have been prepared, and work on the building will be started in the early spring. A handsome Y. W. C. A. home has been purchased within the last few months with funds raised by popular subscriptions. It has been furnished and equipped and is now occupied.

Our returning soldiers and sailors will be gratified with our road construction in Muskingum County, of which Zanesville is the county seat; 56.71 miles of improved roadway have been recently constructed. The types built have been mostly brick and concrete, but we have a number of miles of splendid macadam road. Zanesville is on the great National Highway, and with our new road construction we have an improved highway eastward to the Atlantic seaboard. More miles of good roads will, of course, be built during the coming year and each year thereafter.

The cost of these improvements has not embarrassed us. In the several campaigns for money we have had in behalf of Liberty Loans, War Savings Stamps, Red Cross, etc., like other patriotic cities, we have exceeded our quota in each instance. However, I need scarcely observe that in order to accomplish these things it has been necessary for us to work. Under an anti-loafing ordinance passed by Council last year, it is made mandatory for every able-bodied citizen between the ages of 18 and 50 to be engaged in some useful work. This ordinance has been executed with vigor by our officers, and the results obtained have proved the wisdom of the enactment.

Prison labor is used in the up-keep of the streets and park improvements. One of our best park improvements was built almost entirely by prison labor. Using the prisoners in cleaning and repairing the streets has brought large financial returns. It is interesting to know that the construction of the National Highway eastward from Zanesville, which was built at the request of the Government as a necessary war measure, was made possible by the use of prison labor from the State Penitentiary and Reformatory. Owing to the scarcity of labor, this improvement could not have been completed within the past year except for this labor from the state institutions. The prisoners were all delighted with the privilege of doing something to help win the war; we have the contractors' word for it that each one did a man's job. The particular improvement is a 16-foot road, monolithic brick construction, 14 miles in length and it was completed in approximately 19 days.

J. E. HARKNESS,
City Solicitor.

Atmospheric Sanitation*

Smoke Abatement a Question of Education, and Dust Elimination a Problem in Municipal Housekeeping

By C. S. Sale

Formerly Assistant to the Director, Engineering Experiment Station, and Assistant Professor of Civil Engineering, University of Illinois, Urbana, Ill.

ATMOSPHERIC sanitation is a subject which most of us commonly refer to as smoke abatement. The title has not been used to confuse or perplex, but rather to make clear at the outset that the problem of purifying the air of our cities involves much more than the abatement of smoke. Smoke is only one of several sources of atmospheric pollution, altho it is the most important single source.

In every city where the activities of industrial and community life proceed upon any considerable scale, the atmosphere becomes saturated with foreign matter which constitutes a variety of impurities. The presence of these impurities is damaging to property, injurious to health, harmful to vegetable life and altogether undesirable now that cities are taking a pride in their cleanliness and beauty.

The need for better and cleaner air in our cities is apparent to all. Even the smaller cities and towns are suffering from the effects of air pollution. City officials have given attention to it, and in many cases ordinances have been passed prohibiting the discharge of smoke into the air, and are generally being enforced with admirable skill and good judgment. Most legislation having for its purpose the purification of the atmosphere has been directed against smoke. Little serious attention has been paid to other sources of atmospheric pollution, such as street dust, building dust, rubbish heaps and others shown in this article. There is, however, a marked distinction between the methods which may be successfully employed to abate smoke and those which will serve to eliminate other sources of pollution. The problem of smoke abatement is both an engineering and an educational problem; that of dealing with other sources of atmospheric pollution is one of the problems in municipal housekeeping.

Smoke abatement at present is a matter possessing all the importance which has heretofore been normally attached to it, plus the advantage of serving as a direct means of conserving fuel. It therefore has its old aspects as a municipal problem, and in addition its newer aspects as a national problem. As a means of fuel conservation, I do not place emphasis upon the possible recovery and utilization of heat units which may be contained in the smoky discharges from chimneys and stacks, but point rather to the obvious fact that the process of bringing about the abatement of smoke does, and to be successful must, involve a better understanding, on the part of firemen, owners or operators of fuel-consuming plants, of the principles of good fire-room practice. Better fire-room practice means fuel economy.

Difficulties in Dealing with the Smoke Nuisance

In dealing with the smoke nuisance it has usually been the custom to consider only the visible aspects of smoke. Ordinances, therefore, have sought to prohibit the emission into the air of "dense" smoke, "black" smoke, "dark" smoke, "dense gray" smoke, "thick gray" smoke, etc. The prohibition of noxious gases and offensive odors is included in the case of a few ordinances, but no satisfactory definition of these is given. Of all smoke abatement ordinances of the present time it may be said, therefore, that while the general purposes sought are evident enough, the definite basis upon which they may be enforced is lacking. Dense gray smoke to one inspector or observer may be classed as light gray smoke by another.

Furthermore, smoke abatement ordinances have generally been merely prohibitory in their terms. But those to whom

* From a paper presented before the Illinois Municipal League and the League of Illinois Municipalities.



SOURCES OF DUST IN CITY STREETS

1. Waste materials dumped in alleys. 2. Unimproved alleys used by delivery wagons are either muddy and unsightly or dry and dusty. 3. Accumulations of ashes and other waste on roofs. 4. Sweeping street refuse into gutters, to be collected later by teams. 5. During the process of loading the wagons the wind has full opportunity to blow out the finer particles.

has fallen the task of administering the law have found that a mere order to "stop making smoke" does not get results. Smoke inspectors found that there were only two ways to prevent smoke: either put out the fires or educate plant owners and firemen in the design, installation and operation of fuel-consuming plants. The problem became at once an engineering problem and an educational problem. It was found that, to abate smoke, changes often had to be made in boilers and always in operating methods and conditions. Individual plants had to be studied and individual instruction given.

Securing Smokeless Combustion of Bituminous Coal

The present situation in the fuel market is such that practically the only fuel available for use in many parts of the country is bituminous coal. It must be accepted and used for residences and apartment buildings, as well as for industrial purposes. This condition still further complicates the smoke problem, because house heaters which burn Pocahontas or anthracite satisfactorily generally require much greater care and more frequent attention when bituminous coal is used. Without under-

aking a detailed discussion of furnaces and eaters, and their operation, it may be said hat smokeless combustion of bituminous oal and its economical use involves com-liance with certain definite principles:

1. The fresh coal should be introduced nto the firebox at such a point and dis-ributed in such manner that the combust-ble gases distilled from it will be required o pass over incandescent portions of the ire or over surfaces which are maintained t a high temperature. Observance of this rinciple promotes the ignition and com-ustion of the distillates.

2. The stream of gases arising from the resh fuel must be heated quickly and must e kept at a high temperature until the pro-cess of combustion is well advanced. The use of a fire-brick arch under which the distillates may be burned is an aid in securing this condition.

3. An ample supply of air, under proper control, should be available to aid the combustion of the gases which arise from bituminous coal.

4. The proportions of the furnace and the firebox should be such as to provide an ample flame-way. This condition is necessary in order to allow sufficient time for the burning of the gases. The length of flame-way in many types of furnaces may be increased by the use of a baffle wall or of arches.

The Engineering Experiment Station of



SOME OTHER REASONS WHY CITY STREETS ARE DUSTY

1. Handling the refuse from building operations by chutes. 2. Neglected back yards where children and fowls pulverize the surface. 3. Old plaster and other material from wrecked buildings dumped on vacant lots. 4. Teams handling merchandise of many kinds stir up the bare earth and scatter litter. 5. Coal handled by hand from the cars.

the University of Illinois has recently issued a circular, designed to meet the needs of the layman rather than the engineer, which sets forth certain fundamental principles involved in the economical operation of house heaters.

With reference to the broader phases of atmospheric pollution, in which every city official is interested, it should be recognized that:

1. Smoke has three distinct characteristics, to each of which a suitable standard of measure may be applied. These are:

(*a*) Visible properties
(*b*) Solid particles
(*c*) Gaseous products

2. Smoke is responsible for only approximately two-thirds of the pollution in the air, the remaining one-third having its origin in sources the disposition of which is a relatively simple and inexpensive matter.

By "visible properties" of smoke is meant those properties which impart visibility to it or make it apparent to the eye. Public interest has been centered in this aspect of smoke, and it has been assumed that a chimney which did not give forth a discharge visible to the eye was not a source of atmospheric pollution. This assumption is not borne out by the facts. Tests have show that stationary plants discharging thru th smokestack as much as two per cent of th fuel fired may appear smokeless to the ey On the other hand, it has been shown tha stacks recording a smoke discharge of hig visible density may be emitting in the for of solid particles only a small fraction o one per cent of the fuel fired. Thus ther is apparently no relationship between thes two aspects of smoke. Both are objection able. Visible smoke is offensive to the ey and solid or dust particles from smoke stacks are injurious to property, to vegeta tion and to animal life. In densely popu lated cities the discharge of solid particle amounts to about 600 tons per square mil per annum; even in cities of moderate siz the deposit is as much as 300 or 400 ton per square mile per annum.

This brief survey of the problem of at mospheric sanitation does not, of course touch all aspects of it, nor concern itsel with details of procedure. It is a problen which all cities sooner or later must fac and solve, and it is obvious that it is on for the engineer or for the city official wh is trained in a knowledge of the details in volved in such an undertaking.

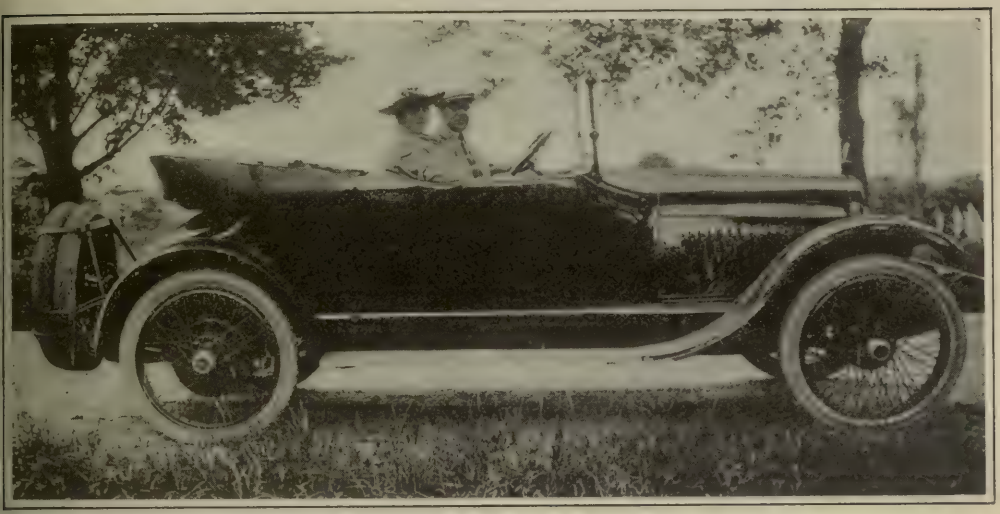
New York Police Department on the Trail of the Auto Thief

So numerous have been the reports of stolen automobiles in New York City that the Police Department has its "Auto Squad" of detectives, who specialize on automobile thefts.

The accompanying illustrations show something of how automobile thieves work. The first picture was taken shortly before the car was stolen. The second shows the car as it was found in a Harlem barn by two detectives of the Auto Squad. These detectives made a practice of placing under surveillance all sheds, garages and barns used as possible storage places for stolen cars. It was suspected that one of these sheds housed an automobile that had been stolen from in front of an apartment hous in upper Manhattan, and, working on thi theory, the detectives entered the shed an discovered the stolen car in the conditio pictured.

While the detectives were making a search of the barn, two of the auto thieve arrived on the scene in a stolen Ford. The were immediately placed under arrest Upon examination, the prisoners admitte that they were engaged in stealing automo biles which they would take apart and sel piecemeal as extra parts. This they had found to be extremely profitable.

Their arrest served to clear up a number of other stolen car cases with which they



THE MOTOR CAR BEFORE IT WAS STOLEN

were identified. The apparent ease with which they made their thefts should be a warning to all automobile owners to install some effective safety device which will insure the security of their cars in their absence.



PARTS OF THE DISMEMBERED CAR AS THEY WERE FOUND IN A HARLEM BARN WHERE THE THIEVES WERE CAUGHT

Cleveland's Municipal Library

By H. C. Hodges, Ph. D.

Formerly with Division of Municipal Administration and Public Service, Western Reserve University

AMONG those municipal reference libraries which have been successful in forcing their services on their respective constituencies, the one at Cleveland is rapidly building up an enviable reputation. It was opened in December, 1912, at the old City Hall, in a room for which there was no other demand, and by the summer of 1916 its usefulness was so recognized that it was assigned to spacious and strategic quarters in the new building.

In its early career the library placed its limited personnel at the service of the Charter Commission, responsible for the existing organization of Cleveland's government. It also provided the index for the report of the Commission. At the present time, besides performing the routine functions for which it was established, it has developed the following activities:

1. It furnishes texts, pamphlets and bibliographies covering subjects of examinations listed by the Civil Service Commission.

2. It provides unsolicited and scheduled distribution of its magazines among City Hall employes.

3. It solicits additional copies of pertinent magazines for periodic distribution in the City Hall. A list enumerating sixty-one titles has been distributed, asking that interesting subjects be checked for "delivery to your desk."

4. It serves as a distributing agency for pamphlets and notices of suitable content, intended for municipal employes.

5. It maintains a mailing list for Cleveland publications.

6. It serves as a clearing-house for information and advice in connection with the course in government for public employes, given by the Division of Municipal Administration and Public Service of Western Reserve University.

7. It materially assists the Committee of Fifteen—a citizen committee, representing fifty Cleveland organizations, which is investigating



THE MUNICIPAL REFERENCE LIBRARY IN CLEVELAND

the advisability of the city-manager plan for Cleveland. The library coöperated in the preparation of a bibliography for the use of the Committee. An extensive survey on this subject was made by the librarian.

8. It works with the Publicity Department of the city government.

9. It coöperates in a broad way with the various departments of Western Reserve University.

10. It places on the desks of officials in the City Hall the most advanced information on those subjects in which they should be interested.

11. It keeps open house for the use of councilmen when Council is in session.

Zone Law Bans Billboards from Residence Districts

By Herbert S. Swan
Secretary, Zoning Committee, New York

PRIOR to the adoption of the zoning resolution there existed in New York absolutely no safeguards to protect esidential districts against billboards. Advertisers were free to erect huge signs vherever they wished, whether the site hosen was opposite a church or a wareouse, a park or a railroad yard, a home or gas house. No locality had any amenities vhich the billboard was bound to respect,— could go anywhere. A private dwelling ad no more rights in a residential district han fences featuring theatrical extravaanzas or whiskies and tobaccos.

All this has been changed by the zoning esolution which prohibits property situated residential districts from being put to ny but the following uses and the accessory ses customarily incident to these uses:

1. Dwellings, including dwellings for one r more families, boarding-houses, and hotels aving 30 or more sleeping rooms
2. Clubs, excepting clubs the chief activity f which is a service customarily carried on a business
3. Churches
4. Schools, libraries or public museums
5. Philanthropic or eleemosynary uses or stitutions, other than correctional institutions
6. Hospitals and sanitariums
7. Railroad passenger stations
8. Farming, truck gardening, nurseries or reenhouses

The term "accessory use" does not include any building or use not located on the me lot with the building or use to which it accessory. A private garage for more han five motor vehicles is not deemed an ccessory use. Presumably the only kind f signboard constituting an accessory use the ordinary "to let" or "for sale" sign affecting the premises on which it is located.

Commercial advertising can in no sense be deemed accessory to any of the uses specifically permitted in residential districts. The erection of signs in the future will therefore be confined to such sections of the city as are situated in business districts or unrestricted districts.

The city's determination to enforce this provision of the zoning resolution has been demonstrated in several instances by the revocation of permits mistakenly issued for the erection of billboards in residence districts.

The zoning law, it must be remembered, is not retroactive in any of its provisions. Uses not conforming to the restrictions imposed on the districts in which they are situated are allowed to continue provided they existed in the district previous to July 25, 1916, the day the law was passed. Hurtful or harmful uses, which have invaded residential neighborhoods since that date, unless authorized by the Board of Appeals after a public hearing at which all property owners immediately affected by the proposed use were notified to appear and have their objections heard, are in the nature of violations.

The zoning resolution has at one stroke done more to remedy the billboard evil in the residence districts of New York City than all the laws and ordinances previously passed on this subject put together. Instead of merely regulating the height, size and construction of signs, it frankly recognizes the fact that there is no such thing as a billboard respectable enough to rub elbows with churches, schools and private homes.

The Permanent Traffic Guide: Is It a Protection or a Menace?

Some time ago permanent safety isles were thought to be all that the name implied. Modifications in the form of traffic posts, some of them lighted at night, and ornamental vases filled with flowers, were rapidly developed, until nearly every community in the country had one or more such devices as aids in directing traffic.

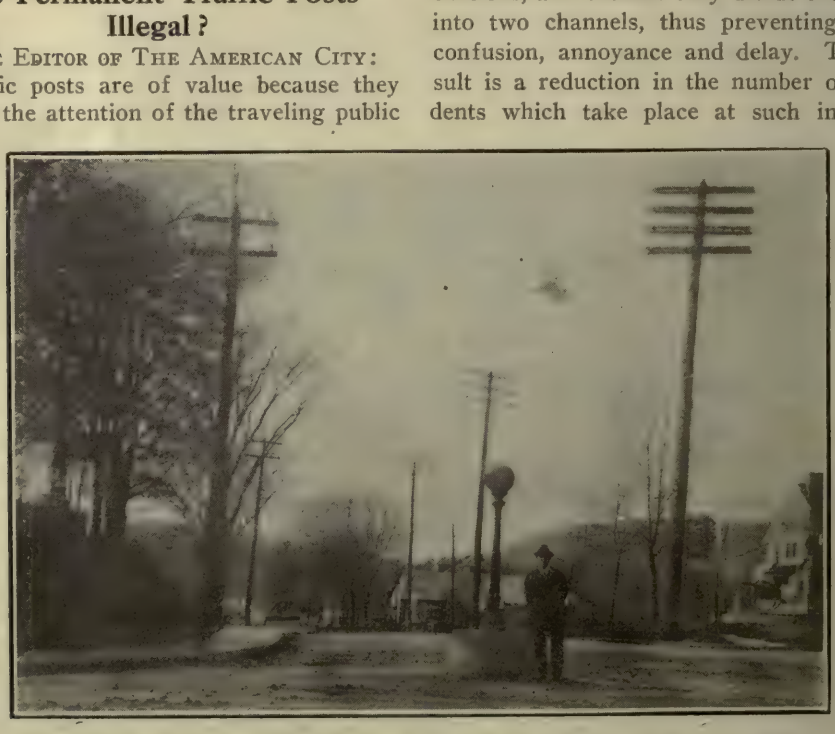
In the December, 1915, number of The American City (p. 698), *the question was raised, "Are permanent safety isles really safe?" and comments from municipal officials and others were printed in that and subsequent issues. At that time none had challenged the legality of such traffic posts or safety isles, altho many had seriously questioned their safety. Now comes a former State Highway Commissioner of New Jersey, who alleges that all such devices are unlawful obstructions of the highway. His letter is printed below and is followed by a comment from an official interested in public safety in a California city which is not yet worried about the legality of its posts, but is concerned with their beauty and effectiveness.*

Comments upon these two points of view from readers of The American City *will be received with interest by the Editors.*

Are Permanent Traffic Posts Illegal?

To the Editor of The American City:

Traffic posts are of value because they attract the attention of the traveling public to the fact that the traffic in both directions at the point marked warrants special precautions, and because they divide the traffic into two channels, thus preventing much confusion, annoyance and delay. The result is a reduction in the number of accidents which take place at such intersections.



TRAFFIC POST WITH PERMANENT BASE 4 FEET WIDE PLACED AT INTERSECTION OF ROADS, WHICH MIGHT CAUSE ACCIDENTS OR LOSS OF LIFE, FOR WHICH LOCAL OFFICIALS MIGHT BE RESPONSIBLE

I favor traffic posts that have small base

nd are movable. Such posts are especially ecessary where there is no traffic officer n duty. A permanent base located in the enter of the traveled road is, under the New Jersey laws, an illegal obstruction, nd if it were the cause of damage to a ehicle or of injury to a person, the official vho caused the placing of the obstruction vould be liable to indictment.

The broad legal principle upon which we ase our statement that fixed posts in the ighway are an illegal obstruction is that nunciated by the courts of several states, o wit, that the public is entitled to free and nobstructed use of the highway between ndicated lines; for example, if a certain ortion of the highway is set aside as a car- iageway and is defined by curbs or other iatural objects, the public is entitled to xpect and to have free and unobstructed se of the portion of the highway thus narked out. This principle is recognized in he several ordinances and regulations pub- ished by municipalities; thus, any building naterial deposited in the highways must ave placed upon it at night a light to warn he traveling public of an obstruction where egally none should exist.

Highway contracts provide that in all ases the contractor shall be liable for dam- ges to persons or property which result rom any obstruction of the highway. To protect himself, the contractor erects bar- riers and employs watchmen. The formal notice, so often seen, is another acknowl- edgment of the right of the public to free and unobstructed use of the highway; for example, "All persons are cautioned against using this road or bridge, as the same is in an unsafe condition, and anyone so using it will do so at his own risk." These very precautionary notices admit that the public has a right to free and unobstructed use of the highway. Another old decision handed down years ago, and reiterated by the courts, goes still further. It states that any person traveling upon a highway is a legal obstruction, but when the said individ- ual stops and stands upon a highway he be- comes an illegal obstruction.

From these various citations, I feel that I am fully justified in stating that the erection of fixed traffic posts in a public highway is illegal.

R. A. MEEKER,
Former State Highway Commissioner.
Trenton, N. J.

A Concrete Vase as a Traffic Guide

To the Editor of THE AMERICAN CITY:

The accompanying photograph shows a form of traffic guide adopted by the city



ORNAMENTAL TRAFFIC POST ON A STREET IN MODESTO, CAL.

of Modesto, Cal. It is made of reinforced concrete in the form of a vase and is surmounted by a receptacle containing flowers, ferns, etc. Beneath this, in a hollow square, is an electric light shining in four directions, and lower down in the panel is the usual "keep to right" sign. The post is lighted from the city's street lighting system thru individual transformers at low voltage and a current of 6.6 amperes.

The posts are maintained by the women and the merchants on whose street corners the posts happen to be located. Several receptacles are furnished for each post, to guarantee that there will always be fresh flowers or such other foliage as the season may suggest.

In our business section, where we park the traffic in the middle of the street (as the picture shows), the traffic guide has a decided influence on the movement of vehicles along the street before they reach the intersections. While there is room for one vehicle to pass another, the tendency is to trail behind, and this brings them to the intersections under control. Then again, the flowers on the pedestals are of themselves an invitation to be cautious, for no one with a spark of love for the beautiful will deliberately knock over a vase of flowers or foliage.

In the residential districts the parking is at the curb, and again the traffic guide is respected, for its weight suggests a broken fender, a possibility which the driver is careful to guard against.

We are convinced that each post is as satisfactory as a policeman at the same spot. It is "on the job" and no one has ever been caught "cutting corners." No post has ever been damaged, therefore no machine has been touched; no part of a car can touch a post until the wheels run on to the base. The posts are removable, and can be set aside for parades, etc. Experience with lighter and cheaper posts shows that people develop a delight in carrying them off or destroying them.

A small American flag no larger than a lady's handkerchief set in a brick at an intersection will control traffic as readily as a policeman and take three shifts of eight hours each without complaint. I hardly think the traffic guide could take the place of a semaphore or other means for conveying intelligence at crossings where traffic is constantly passing, and its use will always be confined to those districts where travel is normal.

The records of the Police Office do not show that any accidents have occurred at intersections where traffic guides are located, and there are plenty of records of wrecks and other accidents at other places.

In my opinion a traffic guide should not be made permanent, as there are many municipal improvements, such as excavations for sewers, water, conduits, etc., that might be inconvenienced by such a fixture.

Modesto, Cal. W. I. CARPENTER,
City Electrician.

On the Calendar of Conventions

March 24-25.—Pasco, Wash.
Washington Association of Commercial Organization Secretaries. Semi-annual convention. Secretary, A. F. Marsh, Chehalis, Wash.

April 9-12.—Chicago, Ill.
American Physical Education Association. Annual convention. Secretary, Dr. J. H. McCurdy, 93 Westford Avenue, Springfield, Mass.

April 14-19.—Mineral Wells, Tex.
United States Good Roads Association. Annual convention. Secretary, J. A. Rountree, Birmingham, Ala.

April 25-26.—Philadelphia, Pa.
American Academy of Political and Social Science. Annual meeting. Secretary, J. P. Lichtenberger, Logan Hall, West Philadelphia, Pa.

April 29-May 1.—St. Louis, Mo.
Chamber of Commerce of the United States of America. Annual meeting. General Secretary, Elliot H. Goodwin, Riggs Building, Washington, D. C.

April 30-May 2.—Nashville, Tenn.
American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

May 1.—St. Louis, Mo.
National Association of Commercial Organization Secretaries. Readjustment Conference. Secretary, J. P. Hardy, Commercial Club, Fargo, N. Dak.

May 6-8.—Ottawa, Ont.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 87 Milk Street, Boston, Mass.

May 13-14-Chicago, Ill.
American Association of Engineers. Annual convention. Secretary, C. E. Drayer, 29 South LaSalle Street, Chicago, Ill.

May 16.—New York City.
American Institute of Electrical Engineers. Annual business meeting. Secretary, F. L. Hutchison, 33 West 39th Street, New York City.

June 9-13.—Buffalo, N. Y.
American Water Works Association. Annual convention. Secretary J. M. Diven, 47 State Street, Troy, N. Y.

"Back to School!"

THE Back-to-School Drive begun last fall by the Children's Bureau of the United States Department of Labor as a means of returning to school some of the thousands of children who deserted their books as a result of the war-time demand for labor, is still in full swing. Thirty-eight states, the District of Columbia, and New York City are now actively engaged in rounding up the deserters and trying to persuade them that the training offered by the schools pays in dollars and cents and in health and increased capacity for enjoyment. The actual work of the drive is being done thru the Child Conservation Section of the Council of National Defense, which is organized into state, county, and local units. In each school, committees have been formed whose first duty is to study child labor and school attendance laws. After that they go to the county superintendent, the school principals, and teachers to get accurate lists of the children who have not returned to school. Then begins the real work of getting the children back. Parents are called upon, and the committee members talk over with them why it is important not only to the child but to the country that he be well prepared for work before attempting it. Where the reasons for leaving are pecuniary, an adjustment is attempted so that the child can return. The Bureau urges that the adjustment take the form of a scholarship similar to those in practically all of the colleges, and in certain city school systems. The average amount of school scholarships is $120 a year, and it is hoped that as a result of the drive an average of at least one will be founded for each of the 281,000 schoolhouses in the United States.

The opening of the schools for the fall term gave the Children's Bureau an opportunity to find out to just what extent children were leaving school prematurely, whether those who had worked on vacation permits were returning, and, in general, the conditions among working children. A series of inquiries was made in typical industrial and commercial centers to throw light on these and other questions. The cities studied include New York, Philadelphia, Chicago, Boston, Baltimore, Pittsburgh, Washington, Wilmington, St. Louis, Cincinnati, Louisville, and several smaller cities. In Washington it was found that this year 1,095 permits to work, either outside school hours or full time, had been granted under the law which permits children of 12 or 13 to work, if, in the opinion of the Juvenile Court, the poverty of the family justifies it. In 1916-17 only 277 such permits were issued. This is a gain of 295 per cent. The number of children from 14 to 16 who were granted regular working permits rose from 727 in 1916-17 to 1,917 this year—an increase of 164 per cent. Figures from a New Jersey city show that altho the population increased during our first year at war, school attendance fell off four per cent, with the greatest decrease in the 7th and 8th grades.

Reports of greatly increased shifting from job to job seem to indicate that the child is not finding in his work a steadily progressing training. The figures do not show that children are staying at their jobs more steadily because of higher wages, or that they are staying long enough to gain from their industrial training experience which will make them increasingly useful.

All this means that many children have gone into industry without the education that they need to become efficient workers and good citizens, and, more than that, that they are not getting in the industrial world any sufficient substitute for the training they failed to get in school. In order to prevent other boys and girls from entering the already overcrowded labor market, the Children's Bureau has made the Back-to-School Drive also a Stay-in-School Drive. Children are being urged to stay in school until they are at least 16, or, better, 18 years of age. With a view to keeping them there, teachers and school welfare committees are making a study of the opportunities open to children at 14 and are comparing them with the work available for older children with more training. They are holding meetings of parents and children for discussion of the reasons why education pays. In many places, manufacturers' associations are lending their active coöperation in encouraging longer attendance at school.

A new Federal Child Labor Law, just passed, in effect prohibits the employment of children under 14 in factories and of children under 16 in mines and quarries

and insures a maximum 8-hour day and prohibits night work for children between 14 and 16 employed in factories. But even with this law in force, many children under 14 will be able to work at some time, in some occupation, in practically every state in the Union. These children will receive only such protection as public opinion demands that they shall have.

The Children's Bureau emphasizes the fact that the success of the Back-to-School and Stay-in-School Drive depends largely upon an educated and intelligent public opinion which will insist upon the complete enforcement of child labor and school attendance laws and demand that each community shall see to it that its children are not deprived of schooling because of poverty. The school welfare committees are urged to secure for their communities the visiting teachers, vocational advisors, and similar means of guarding the school child's well-being which have proved their value in other localities.

Municipal Town Planning in Delhi, India

PREVIOUS to the Imperial Durbar in 1911, Delhi was an unimportant town, not even the capital of a province. Situated some 300 miles from Lahore, the capital of the Punjab, the city had been neglected; it had developed in a haphazard fashion, with practically no attempt at town planning.

The city was very poorly situated for development; it was hemmed in on all sides by obstacles which prevented its normal expansion. On the east was the Jumna River; to the north was the European settlement, called the Civil Lines, with an intervening strip of government land used for military purposes; to the South was a large area of government land covered with the ruins of former cities; and to the west was the Ridge and a large Mohammedan cemetery known as the Kadam Sharif. Expansion being difficult, the only course left open to the landowner was to build more stories to his building. Anyone acquainted with India and its narrow village lanes can easily imagine how high buildings have caused congestion and affected the physical welfare of the community.

According to the July issue of *The Local Self Government Gazette,* of Madras, the immediate effect of Delhi's being proclaimed the capital of India brought the question of municipal development and town planning to the foreground. After the decision of the Government to build the Imperial Capital to the south of the city, it was obvious that Delhi must expand to the west.

How the City Is Expanding

Several schemes have been put into operation, notably that known as the Karaul Bagh or Western Expansion Scheme. An area of some 800 acres was acquired at a cost of about $80,000, and this has been laid out on very simple lines. Roads from 60 to 100 feet in width have been cut thru, crossing at right angles, dividing the land into rectangular blocks. These blocks have been divided up into plots by narrower roads, and each plot has been subdivided into units. The unit varies from 50 square yards for menials to 400 square yards for the middle-class settlers, lessees being allowed to take up as many units as they chose. It was seen from the beginning that the well-to-do classes would prefer remaining in the Imperial City, and that the Western Expansion would not attract anyone of more than moderate means.

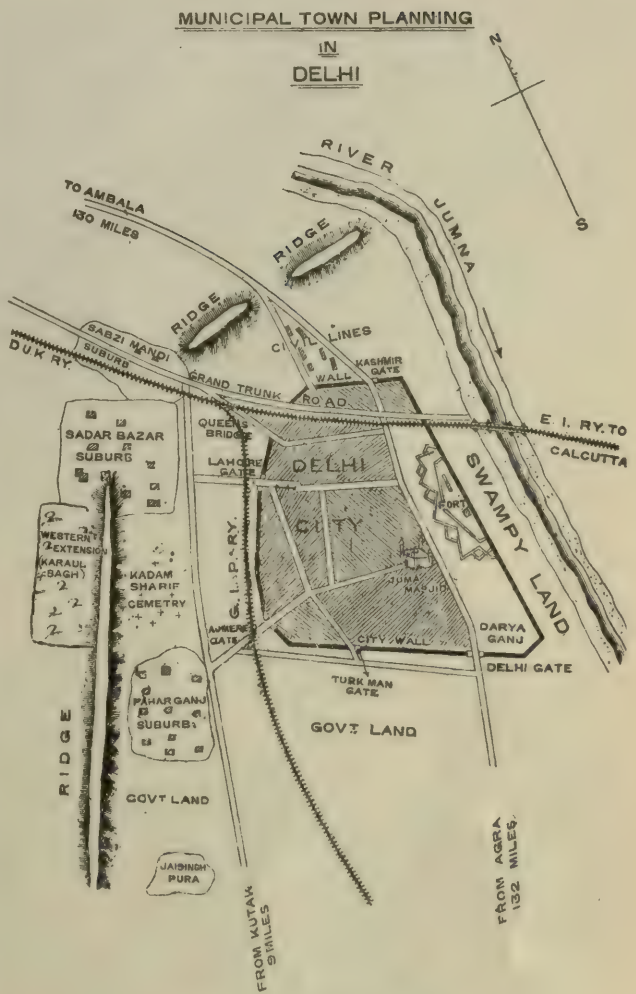
Leases for building sites have been granted for 90 years at the rate of about $20 a year for 100 square yards. Those people who have been dispossessed of their homes during the course of development, residents of Jaisinghpura and of Karaul Bagh itself, have been given similar leases at half that rate.

The scheme provides for a central park of 50 acres, facing which a large site has been allotted on special terms to the Ayurvedic and Unani Medical College. Schools, a police station and small bungalows suitable for Indian habitation will also be located on the park. The broadest of the roads have been planted with trees. So

far the extension has been connected with Delhi by two good roads. A third road giving direct access to the south of the city via Paharganj is to be constructed. This road will greatly aid in the development of the land near the Kadam Sharif cemetery.

A second large scheme is that of building at Daryaganj, where for many years had been the cantonment of Indian troops. When the new barracks were built some ten miles away, 140 acres within the southern walls of the city were left in the hands of the municipality. As yet the town planning here has not been greatly developed.

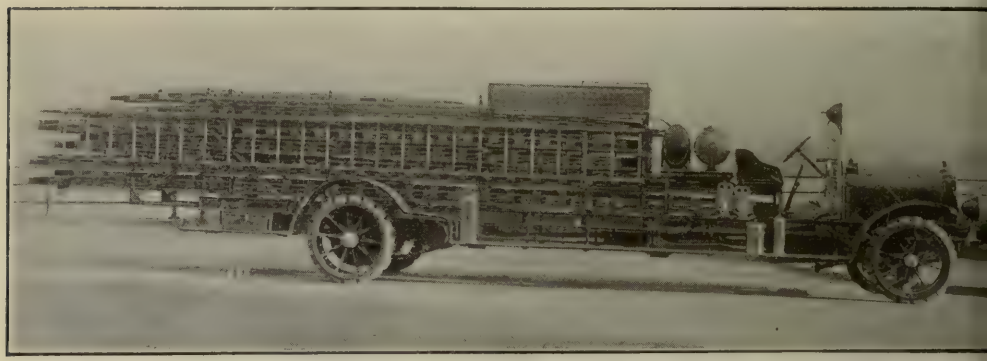
Perhaps the most striking development in Delhi has been the construction of a broad road 80 feet wide from the Queen's Bridge to the Ajmere Gate. The city wall has been demolished, and shop sites have been sold in the northern half, which is known as Burn Bastion Road. The southern section, known as Garstin Bastion Road, is being constructed on similar lines, and it is expected that the congestion in the city proper will be somewhat relieved by some of the traders taking up these sites. The road backs on the Great Indian Peninsula Railway Goods Yard, and so is favorably located for wholesale trade purposes. The construction of the road had a marvellous effect upon land values. Waste land which would not have brought 10 rupees per square yard has been leased in its developed state for five times that amount, in addition to which annual ground rent is paid at 2 per cent of the leasehold price. Corner lots have leased for as much as 90 rupees per square yard.



The Financial Resources

The lands which are being developed all belong to the Government and not to the municipality. Accordingly, the municipal funds have not been utilized. The Government has made special grants to the municipality for the development of these Nazul lands, and has taken the premia paid when the leasehold has been sold. On the other hand, all ground rents go to the municipality, with the proviso that such income is used for further improvements in the city. With the exception of the building of the new Imperial Capital, all development work has been in charge of the municipal engineer, as this arrangement was found to be more convenient.

Dependability and Staunchness the Watchword in Municipal Motor Truck Service

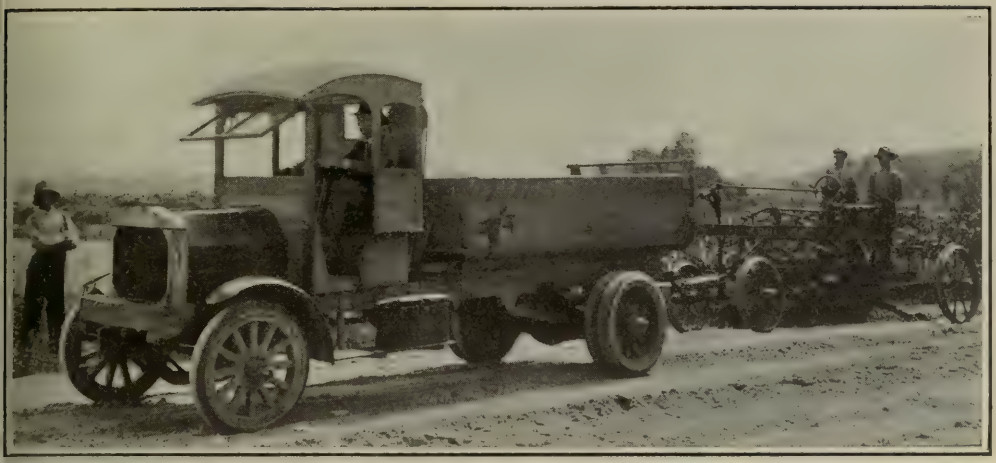


THE HEAVY CITY SERVICE WHITE LADDER TRUCK, WITH CHEMICAL EQUIPMENT, OWNED BY THE CITY OF QUINCY, MASS.

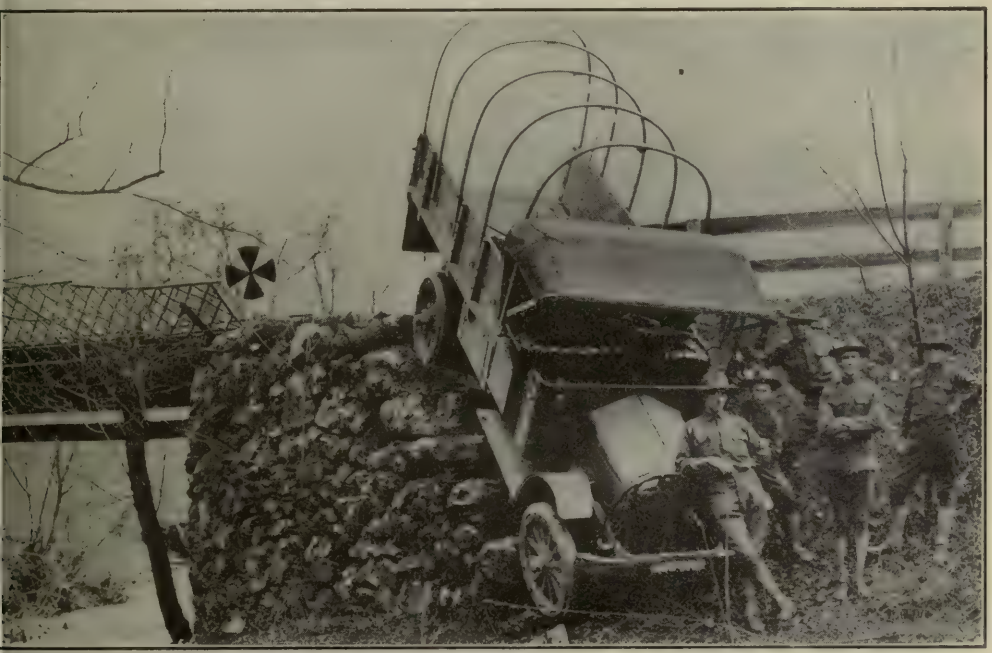


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PHILADELPHIA'S AUTOMOBILE FIRE APPARATUS IN SERVICE



CUMBERLAND COUNTY'S FEDERAL TRUCK DRAWING RUSSELL GRADER ALONG A MARYLAND HIGHWAY



YANKEE PLUCK NARROWLY AVERTED A CALAMITY

This U. S. Army Garford truck was coming from Camp Grant, N. C., heavily loaded with cinders. As it approached the point marked X in the picture, the driver saw that a motor-cycle was stalled in the center of the bridge. There was no time for the driver of the motor-cycle to save himself, and the soldier at the wheel of the motor truck could not slow down. There were only two alternatives open to him: either to run down the man on the motor-cycle or to turn sharply and save him. Quickly choosing the latter and risking his own life, the driver of the truck veered, missing the motor-cycle and its rider but striking the heavy bridge-rail.

This turned the truck sideways and back, so that it plunged headlong down the embankment and stopped in the position shown. When the picture was taken, the load of cinders had been removed. Fifteen minutes later the truck was pulled back onto the road, and nobody being any worse off for the narrow escape, it proceeded on its way, not being damaged at all after its downward leap. Undoubtedly the driver of the motor-cycle owes his life to the quick action and courage of the truck driver.

Chamber of Commerce Buildings—Their Uses and Possibilities

The Second Instalment of a Series of Items on the Homes of Commercial Organizations, with Descriptions of Their Club Facilities and Their Uses as Community Centers

The average American is a home-loving animal, with a fair degree of pride. He has or yearns for an attractive residence, surrounded with beautiful lawns and gardens. He builds imposing churches and cathedrals, fine schools, spacious parks and costly country clubs. In these and a hundred other ways he shows a keen appreciation of substantial, permanent, impressive and beautiful things. Is it any wonder, then, that when his Chamber of Commerce has a mean location and cheap furniture, the average American fails to associate and value it along with those other desirable things of life with which he is daily associated? Will his imagination see beauty and culture and happiness springing from a basement or an attic? In other words, will he expect the stream to rise above its source?

The Chamber of Commerce must become institutionalized. It must be given a home and surroundings in keeping with its ideals and purpose. Opportunity must be afforded for the social contact of its members. Facilities must be provided for meetings, equipment for educational work, machinery for utilizing all the latent forces of the citizenship. The Chamber of Commerce home must become the civic center of the community; a place dear to the citizens, because it means something real to them.

DETROIT, MICH.—The Detroit Board of Commerce building was erected in 1912 at a cost of $260,000, exclusive of the land. The land on which the building stands was purchased in 1908 with a dwelling thereon that was used for offices of the Board until 1912. The original cost of the property was $70,000, altho in 1912, when the present building was erected, the land alone was worth about twice that sum. The project was financed by the issue of $250,000 in serial bonds, each series redeemable in five years. Title to the property is vested in the Board of Commerce as a whole.

When the Board of Commerce was considering the erection of a building of its own, the question of whether the structure should contain stores and offices for rental or should be adapted solely to the uses of the Board, was debated for a long time. The latter plan finally prevailed, and experience has demonstrated the wisdom of the decision. None of the building is rented except the auditorium, the income from which, with the membership dues, constitutes the Board's chief source of revenue.

The building contains three stories and a basement and covers the entire lot of 106 x 120 feet. Opening from a small vestibule on the first floor is a spacious lobby. Next to this on one side are the offices of the secretary and his immediate staff and on another side is the lounge room, 80 x 46 feet, and two large alcoves. The lounge is supplied with writing tables, luxurious settees and chairs, and with about fifty current magazines and papers. Telephone booths, a cigar stand, a check room, a lavatory and two smaller offices cover the rest of the floor.

In the basement, besides the heating plant, kitchen and pastry-room, there are a large dining-room which will accommodate over 400 guests, four private dining-rooms, a grill room accommodating over 200, four alcoves, which can be curtained off as private dining-



THE DETROIT, MICH., BOARD OF COMMERCE BUILDING

rooms, and the office of the steward. On the second floor are two spacious rooms adapted either for conference or dining purposes, with separate kitchen arrangements. These will accommodate twelve different dining parties, and it is not unusual to have them all occupied at the same time. The dining facilities offered brought about the custom of combining the noonday luncheons with business. The directors hold their weekly meetings in this way, and nearly all the committees of the Board observe the same practice. Committees and members of affiliated organizations and private parties who desire meetings of a business character are also accommodated, so that these rooms are much frequented between the hours of twelve and two. An auditorium, which, with its galleries, will seat 1,200 people, occupies half the second floor. This and the lounge are also used for banquets. No charge is made to outside organizations for the use of the rooms or the auditorium for meetings held in connection with luncheons and banquets, unless the auditorium is used separately.

The diversity of accommodations furnishes opportunity for many activities aside from those which are commonly considered the current work of a commercial organization. The fact that so large a number of business men gather at the noon hour for lunch and committee work suggested the idea of the open forum meetings which have been a feature of the Board's work for the last four years. Arrangements were made for half-hour addresses in the auditorium at one o'clock on Tuesday of each week. At that time the audience is already in the building and it is easy to obtain speakers. The meetings have covered a great variety of subjects and are frequently followed by discussions. They have had a high educational value and have done much to popularize the work of the Board.



THE LADIES' DINING-ROOM IN THE DETROIT BOARD OF COMMERCE BUILDING

Aside from meetings whose main purpose is instructive and educational, the facilities offered by the building have enabled the Board to provide many entertainments and illustrated lectures. A number of enjoyable smokers have been held, also a dinner dance and a pageant. The building has great use as a community center. During the last two years particularly it has been the principal center of war activities.

An estimate is made annually of the cost of entertainment, and an allowance is made for it in the general budget. The restaurant nearly pays for itself.

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DENVER, COLO.—The building occupied by the Denver Civic and Commercial Association was erected at a cost of $163,000, of which about $5,000 was spent for furnishings. The building covers three lots, each 125 x 175 feet, which were leased for 99 years at an annual rental of $3,000.

The building project was financed partly by an issue of bonds in the amount of $100,000 at 6 per cent, to mature in twenty years, and partly thru the sale of the building formerly owned by the Denver Chamber of Commerce, which was superseded by the Civic and Commercial Association. No stock certificates were issued. The members of the organization who hold bonds have an equity in the building, however. A sinking fund of $3,000 is provided each year for retiring bonds. The Association derives its revenue mainly from the membership dues and rentals.

The following bureaus of the Civic and Commercial Association rent offices in the building: Transportation Bureau, Retail Merchants' Bureau, Insurance Bureau, Advertising Bureau, Civic and Legislative Bureau, and Manufacturers' Bureau. The entire ground floor is occupied by the Manufacturers' Bureau, which maintains an exhibit of agricultural and manufactured products, also a free moving picture show. The remainder of the space accommodates the General Secretary's office, the stenographers' office, the office of the accounting department, the employes' general office, the directors' room, the committee room, and the general assembly room, which seats 200 people. The space occupied by the Civic and Commercial Association and its bureaus covers 9,375 square feet.

The assembly room is very generally used by the Association's civic branches, such as the Clean-up and Paint-up committee, the Home Garden committee, etc. The Association operates a restaurant. It does not maintain an entertainment fund.



THE HOME OF THE DENVER CIVIC AND COMMERCIAL ASSOCIATION

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REDLANDS, CAL.—The Redlands Chamber of Commerce occupies the one-story-and-basement building pictured on page 370. On the first floor are the Secretary's office and the exhibition room, and in the basement are the directors' room, the filing room and the storeroom. The building is also the headquarters of the Merchants' and Manufacturers' Association, the Boy Scouts, the Arrowhead Trails Association, and the War Work Committee. None of these bodies pays any rent for its space, but the Merchants' and Manufacturers' Association pays a portion of the salary of the Executive Secretary of the Chamber of Commerce.

The building is used for all kinds of committee work and community gatherings. An out-of-door amphitheater in the city park is used for very large com-



THE REDLANDS, CAL., CHAMBER OF COMMERCE BUILDING

munity gatherings and other appropriate purposes the entire year.

No social or club facilities are provided for the members in this building. The social features of the Chamber's work are conducted in some near-by club. The expenses for entertainment are met by the sale of tickets for each occasion, and deficits, if there be any, are taken care of out of the general treasury. The Chamber does not maintain a regular entertainment fund.

The building was erected on land owned by the railroad and donated for the purpose. The cost of the building itself was $4,000. The Chamber's only source of revenue is the dues of the members. No portion of the space is rented. The building is owned by the Chamber of Commerce as a holding company, and is administered by the Board of Directors. No stock was issued.

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Salt Lake City, Utah.—The Commercial Club of Salt Lake City occupies the entire six-story-and-basement building in which it has its headquarters, the space it occupies covering approximately 48,000 square feet. On the first floor are the main lobby of the building, the Secretary's office, the lounging- and reading-room, the business office, and the check room. On the second floor are the main dining-room, the private dining-rooms and the kitchen. On the third floor are the ladies' dining-room, parlor and dressing-room. On the fourth, fifth and sixth floors are the assembly-room, billiard-room and bedrooms.

The building also houses the Industrial Corporation, the Automobile Bureau, the Soldiers' Welfare Fund Committee, the American Red Cross War Finance Committee for Utah, and the Liberty Loan Committee. No rent is charged these organizations, because their work is considered a part of the business of the Commercial Club.

The restaurant, the reading- and lounging-room, billiards, cards and indoor golf provide the members with adequate social and club facilities. The civic, commercial and social interests of the city use the Commercial Club very generally; the assembly-room and the dining-rooms make the Club an ideal community center. An entertainment fund is provided by setting aside every year a certain portion of the receipts from membership dues for entertainment.

The building itself cost $273,584, the land $75,000, and the furniture and equipment $57,198, making the entire cost of the building project $405,782. The Commercial Club had on hand at the time of building a portion of the money required for the project, and financed the remaining portion by floating $250,000 worth of bonds. Membership in the Commercial Club automatically makes each member a part owner of the institution. The Club's chief sources of revenue are the membership dues and the receipts from the dining-rooms and sleeping rooms.



THE HOME OF THE COMMERCIAL CLUB OF SALT LAKE CITY

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Quincy, Ill.—The Quincy Chamber of Commerce occupies approximately 15,000 square feet of space in the three-story-and-basement building in which it has its headquarters. On the ground floor are the private office of the Business Manager, the directors' room, the assembly-room and parlor, the offices of the Fuel Administrator and the Red Cross, the clerks' office and the reception room. On the second floor are the offices of the Farm Improvement Association and the Home Improvement Association of the county, the convention hall and the dining-hall. The third floor was used during the war exclusively as a Red Cross workshop, and accommodated 500 workers. It is the intention now to use the space for the social features of the Chamber's work. The kitchen, which is fully equipped with up-to-date appliances, is in the basement, also the store-room, the Chamber's record room, and a lavatory for men.

Twenty-nine affiliated and ten coöperating organizations are quartered in the building.

They pay $15 a year each for such space as they use.

The building is equipped with facilities for the entertainment of its members. The dining-hall has not yet been opened, but it is planned to begin operating it soon. The parlor, however, is nicely furnished, and with its piano, comfortable chairs and reading matter is very inviting. The organization does not maintain an entertainment fund at present, but expects to establish one soon.

An average of seventy-five meetings are held in the building every month by the many civic and commercial organizations which are working for the betterment of Quincy. The building is a community center in every sense. The convention hall seats about 350 people. For large gatherings the Chamber uses the armory across the street, which seats 2,500.

The total cost of the building project was approximately $35,500, including the cost of the site, $4,500, and the cost of the furniture and equipment, which was approximately $5,000. The property is now valued at $60,000. The money for the land was given by one of the members of the Chamber of Commerce, who also gave $1,000 toward the building. The remainder of the cost was borrowed from a fund which had been raised by popular stock subscription "to carry on the industrial work of the Chamber of Commerce." That fund is being reimbursed out of the receipts from rentals of different parts of the building. The building is held in trust by the Board of Trustees. The members hold the majority of the stock in the industrial fund, and so have an equity in the building, which they surrender when they cease to be members.



THE HOME OF THE COMMERCIAL CLUB, DE LAND, FLA.

DE LAND, FLA.—The building occupied by the De Land Commercial Club cost $17,650, of which $12,500 was expended for the building, $2,650 for the land, and $2,500 for the furnishings. The project was financed by the sale of ten-year six per cent first mortgage bonds. The property is held by a trustee; the members have no equity in it except as the property guarantees the payment of their individual bonds. The Commercial Club derives its revenue from the membership dues and rentals. The only portion of the building that is rented, however, is the assembly-room, which the De Land Woman's Club uses twice a month, and which has a seating capacity of 250.

On the first floor are the secretary's office, the men's dressing room, shower baths, lavatories and toilets, two bowling-alleys, two pool and billiard-rooms, the kitchen, and the janitor's room. On the second floor are the reading and game room, the women's rest room, the serving room and the assembly-room. The building contains a total of 8,528 square feet.

The following organizations which are affiliated with the Commercial Club have offices in the building: the De Land Sanitarium, the West Volusia National Farm Loan Association, the De Land Motor Club, the De Land Hotel Association, St. John's Scenic Highway Association, the Merchants' Trade Association and the De Land Park Commission. The secretary of the Commercial Club acts as the secretary of each of these organizations, none of which is charged rent for its quarters.

The Club conducts bi-monthly musical and literary entertainments. These, with the pool- and billiard-rooms, bowling-alleys and games which are provided, furnish the social facilities considered necessary to keep the members interested. The building is used very largely by the community as a social center, and appears to supply in a great many ways the city's need for such a gathering-place. The Club does not operate a restaurant or carry an entertainment fund.



THE QUINCY, ILL., CHAMBER OF COMMERCE BUILDING

News and Ideas for Commercial and Civic Organizations

Chicago's Crime Commission

CHICAGO, ILL.—Chicago has a new Crime Commission whose avowed purpose is to check crimes of violence and drive criminals from the city. It is not going to delay its activities for a preliminary study of the causes of crime; it is going to deal with conditions as they exist to-day, find a remedy and apply it at once. The Commission is resolved to clear the name of Chicago and convince the stranger that it is not a haven for the thug, hold-up man and murderer.

The Commission had its origin in a special committee appointed by the Chicago Association of Commerce to study crime in this city, particularly crimes of violence. After many months of hard work, the committee reported its conclusion and recommended that a permanent organization be formed to wage an aggressive war against evil-doers. The association promptly acted on this suggestion, and, under its auspices, the Chicago Crime Commission was formed, with Edward W. Sims, former United States District Attorney, as president. The Commission is now at work.

The lines along which it is working are plainly shown by the report of the original committee. This committee, in seeking the causes of crime, first looked into the composition of the Police Department, and found that it was too small, compared with the forces in other cities, as is shown by the following table:

London	One patrolman to 427 of population
Paris	One patrolman to 358 of population
Berlin	One patrolman to 367 of population
Vienna	One patrolman to 492 of population
New York	One patrolman to 553 of population
Philadelphia	One patrolman to 468 of population
Chicago	One patrolman to 712 of population

This was not the only shortcoming of the police force. The committee found that the efficiency of the Department was seriously affected by the fact that commanding officers use their appointive powers for political purposes. Moreover, Chicago policemen lacked proper training in the rules of evidence, a defect that has prevented the conviction of many offenders.

Next, the courts were looked into. The committee found many defects. The courts were lax in granting continuances and in permitting a reduction in the degree of crime charged. Further, too much latitude was allowed attorneys for the defense in questioning veniremen. The modifying of sentences without notice to the State's Attorney was condemned, as was the custom of assigning inexperienced judges to the criminal bench.

"Much of the prevalence of crime," the committee declared, "may be attributed to defects in our jury system. In no cases outside of capital offenses or conspiracy does there seem to be any real necessity for the use of a grand jury." It was pointed out that delays fatal to successful prosecutions would be avoided if it were possible to begin prosecutions without grand jury action. The committee remarked that the law requiring a unanimous verdict in a petit jury case greatly increases the difficulties of conviction.

The State's Attorney is hampered by assistants chosen for political reasons and not because of their ability. The inadequacy of the records of habitual criminals also was pointed out. The carrying of concealed weapons and the working of the parole law also were touched upon.

Among the remedies suggested by the committee were:

Establish a larger police force and one guiltless of political taint.

Appoint better judges and impose restrictions upon the granting of new trials.

Repeal the law permitting a change of sentence after it has been imposed.

Take choosing of judges out of the "sinkhole" of politics.

Dispense with juries in certain criminal cases, which would be to the advantage of the community and would not be unjust to the defendant.

Begin criminal prosecutions, except in capital offenses and conspiracy charges, by filing an information.

Maintain efficient bureaus of records of criminals.

Amend indeterminate sentence and parole laws of state.

Make further study of the problem of mental defectives.

Bring about legislation to separate this class from the normal citizens.

Make the punishment more severe for the carrying of concealed weapons.

ROBERT B. BEACH,
Business Manager, The Chicago Association of Commerce.

A High School Girls' Chamber of Commerce

KANSAS CITY, KANS.—A Girls' Chamber of Commerce has been organized by the young women attending the high school in this city. The novel organization is an outgrowth of the Junior Chamber of Commerce organized by the boy students of the same school a year ago and reorganized this year.

The young women who are leaders of the new organization say they realize that the boys have accomplished many civic and social betterments with their organization and they believe that they, too, can do much for the city. The girls have elected directors and they are to meet soon and elect a president, a secretary and a treasurer. They have used the by-laws of the senior Chamber of Commerce as a guide, and declare that they will do any civic duty assigned them by the parent organization.

E. A. WARNER,
Assistant Manager, Kansas City, Kans., Chamber of Commerce.

The Grand Rapids Method of Reducing Unemployment

GRAND RAPIDS, MICH.—A Community Conference on Unemployment was held in Grand Rapids recently, at which were discussed the many angles of the unemployment situation. It was attended by representatives of practically all the civic, commercial and welfare organizations of the city. The problem of finding employment for the returned soldiers, sailors and other war workers was recognized to be so serious as to require immediate action on the part of those who have it in their power to control the situation. The resumption of normal spring activities, such as road-building, street work and the construction of public improvements, it was seen, would absorb nearly, if not quite all, of the surplus labor, but it was imperative that work be given to these individuals in the meantime. The recommendations contained in the following report of the Committee on Resolutions of the Community Conference were therefore drafted, and offer valuable suggestions to other communities which may be struggling with this problem:

Your Committee appointed to consider the problem of unemployment of returned soldiers, sailors and war workers would call attention to the following fundamental ideas: that patriotic duty did not cease with the signing of the armistice; that unemployment is a national calamity and a community loss, and that the supreme duty of the moment is to create employment.

We believe that a serious situation confronts us now, but that under normal conditions it will be alleviated with the resumption of spring activities.

We have faith in the dominant loyalty and patriotism shown by our people in time of war and believe that they will quickly respond in this crisis.

We realize that the community expects every employer, even at some cost, to take back every employe that entered the service, and also expects every returned soldier and sailor to take up his old work until he can find another place without injustice to others.

Therefore we would earnestly recommend:

1. That all necessary work on public buildings, schools, parks and other public improvements should be started immediately, and that, in view of the unusual situation, a just proportion of all street improvement expense should be assessed upon the city at large.

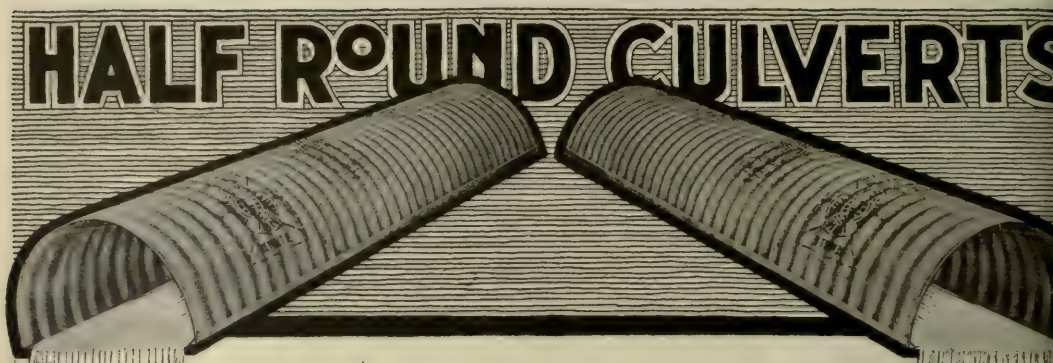
2. That the state good roads program should be adopted at the earliest possible date, and that a liberal policy should be adopted with regard to additions to our state institutions.

3. That all employers who may be compelled to reduce their output should be urged to reduce the working days or hours instead of the working force; and that others be asked to follow the example of these employers who are patriotically carrying a few more employes than they actually need.

4. That all soldiers and sailors who can should return to school and college to continue their education, and that school authorities should grant credit for army experience and should render the utmost assistance to the returning men.

5. That all soldiers and sailors and war workers from small towns and farms should be urged to return, thru coöperation with the U. S. Employment Reserve Office at 304 Grand Rapids National City Bank Building, in this city, to their homes, that they may assist in the serious problems of readjustment in their own localities.

6. That men in the service should remain in camp under pay until positions are assured, and that all disabled men should avail them-



Have You Ever Stopped To Figure Out

the many advantages of half round flat bottom culvert pipe for city use? We make this type of culvert from "Geunine Open Hearth Iron" and they can be readily used when the fill is not sufficiently heavy to permit the use of the right size of round riveted pipe for the capacity needed. The bottom sections can be had in lengths of 6, 8, 10 and 12 feet, thereby giving a more rigid culvert than if the bottom were made of shorter sections. The top sections on the other hand are made in multiples of two feet. When a pipe becomes clogged it is easy to dig down and lift the two foot top section where the stoppage exists after which the top section can be replaced without the necessity of digging up the whole pipe or stopping traffic altogether.

Let us have your address so we can send further particulars.

The NEWPORT CULVERT Co.

NEWPORT, KY.

ves of the free tuition, support and voca-nal training offered by the Government.
. That all banks and other financial insti-ions should encourage by their liberal as-tance all activities which will create em-yment.
. That all private citizens should patri-ally help to create employment by making kinds of repairs and improvements requir-labor; in fact, that everybody should osen up" in order that business in general y be restored to normal confidence and ac-ty.

The organizations represented at the nference were asked to lend their strong pport to the movement, and to send copies the recommendations to similar organi-ions thruout the country. A few of the al organizations have appointed advertis-committees to see that ads are run in daily papers advocating one or more of several points enumerated in the recom-ndations, and to emphasize especially n 8. The official in charge of the local ce of the United States Employment vice reports that this publicity has been y beneficial and that many more people coöperating with him than formerly in nishing work for the unemployed men.

C. ROY HATTEN,
Secretary, Grand Rapids Citizens' League.

Crosse to be Replanned Before Important Improvements Are Made

LA CROSSE, WIS.—This city desires to ct a suitable memorial to its soldiers and ors and it has also been planning to ld a new railroad station and additional ools. At a meeting of a committee of Chamber of Commerce formed for the pose of handling special "after-the-war" blems, there was authorized the creation a Memorial Commission of eleven. icles of incorporation have been applied in the name of the La Crosse War morial Commission. At the first meet-of the Commission, it was agreed that ity plan be secured as a preliminary to ther action in connection with the im-tant problems before the city.

The following resolution was presented unanimously carried at that meeting:

Resolved, That it is the sense of this meet-that in view of the problems of the city in nection with school buildings and their lo-on, and in order that no mistake be made he proper form and location of the pro-ed Soldiers' and Sailors' Memorial, a com-e city plan be procured before any further on is taken."

Dr. John Nolen has been engaged by the Commission and is now at work preparing a complete city plan.

The La Crosse Chamber of Commerce has five representatives on the War Memorial Commission, and its secretary is the Executive Secretary of the Chamber of Commerce. The other members are Mayor A. A. Bentley and William Torrance, representing the city; Walter C. Winter and Abel N. Moore, representing the county, and L. F. Easton, representing the Park Commission of La Crosse.

JAMES R. KINSLOE,
Executive Secretary, La Crosse Chamber of Commerce.

New Bulletins

AUBURN, N. Y.—*Chamber of Commerce Bulletin,* the official monthly publication of the Auburn Chamber of Commerce.

COUNCIL BLUFFS, IOWA.—*The Council Bluffs Way,* the official monthly publication of the Council Bluffs Chamber of Commerce.

PIQUA, OHIO.—*Piqua Progress,* the official monthly publication of the Piqua Chamber of Commerce.

PONTIAC, MICH.—*The Bulletin,* issued by the Pontiac Board of Commerce.

Recently Issued Printed Matter

AKRON, OHIO.—The 1918-1919 Year Book of the Akron Chamber of Commerce.

CANTON, OHIO.—The Fifth Annual Report of the Canton Chamber of Commerce for 1918 is published in a pamphlet, entitled "Canton, the city of Diversified Industries."

CARLISLE, PA.—The annual report of the Carlisle Chamber of Commerce for the fiscal year 1917-18.

CLEVELAND, OHIO.—The report of "An Investigation of Housing Conditions of War Workers in Cleveland," made by the Committee on Housing and Sanitation of the Cleveland Chamber of Commerce and by the United States Home Registration Service. The investigation was financed by the Mayor's Advisory War Committee.

HANNIBAL, MO.—The year book of the Hannibal Chamber of Commerce, containing its report of activities for the year ending January 30, 1919.

NEW YORK CITY.—The Reconstruction Program for 1919 of the City Club of New York has recently been issued.

NEW YORK STATE.—The supplement to the monthly bulletin of the Chamber of Commerce of the State of New York contains the proceedings of a special meeting called to discuss the tentative draft of the proposed treaty amendatory and supplementary to the New York-New Jersey Treaty of 1834.

TACOMA, WASH.—The annual report of the Tacoma Commercial Club and Chamber of Commerce for the year 1918.

AN IDEAL COMBINATION

THE OTTERSON EDUCTOR
and
THE STUDEBAKER FLUSHER

These two machines work together with the utmost efficiency in the cleaning of stree for the reason that the flushing machine washes the dirt and debris from the street pavemen into the catch basins. Following this, the Otterson Auto Eductor comes along and cleans ou the catch basins thoroly and quickly. One Otterson Auto Eductor will handle all of the debr that several flushers might deposit in the catch basins.

Why maintain the old, filthy and costly and unsanitary method of cleaning catch basi by hand when the Otterson Auto Eductor, as shown below, will help to keep your city health by maintaining your catch basins in a clean, efficient and sanitary condition, and at the sam time save money for your city over the hand method?

The following letter from D. R. Lyman, Chief Engineer of the City of Louisville, Ky will interest you in this connection:

"During the first twelve months that this machine was operated, the actual operatin expense, including labor, fuel, and repairs, has averaged 62c. per basin. The machine ha cleaned 5,500 basins, which represent a total operating expense of $3,410.00. Previous to th purchase of this machine, hand cleaning averaged $3.40 per basin, which wouod represent a expense of $18,700.00 on the 5,500 basins cleaned during the past year. The Auto-Eductc has consequently effected us a saving of $15,290.00 in twelve months' time. These figur did not in either case include any allowance for depreciation. If 20% be allowed for annua depreciation, the average cost per basin would be increased to 86c., and the total annual sav ing decreased to $13,970.00, but it is worthy of note that even under this method of accoun ing the machine has more than paid for itself in one year's time."

EQUIPMENT MOUNTED ON ANY 5-TON CHASSIS OF SUITABLE STANDARD MAK

The Otterson Auto-Eductor Company

817 FAIRBANKS BUILDING **SPRINGFIELD, OHI**



Changes Among The Secretaries

A list of the recent changes and new appointments occurring among the secretaries of commercial and civic organizations thruout the United States.

Readers are asked to notify the Editors of such changes as soon as they occur, in order that the list may be made as complete as possible each month.

W. J. Barrett has resigned the secretaryship the Fulton, N. Y., Chamber of Commerce, to cept the secretaryship of the Geneva, N. Y., amber of Commerce. He is succeeded by mes E. Lanigan, principal of the Phillips reet School, Fulton.

R. C. Breth has been elected secretary of the nton, Ill., Chamber of Commerce, succeeding ank E. Birch. Before entering the military vice, Mr. Breth was associated with the rchants Association at Green Bay, Wis.

W. C. Call has been elected secretary of the akum, Tex., Commercial Club, and has also en appointed to take charge of the United ates Government Employment Station at akum.

H. Van R. Chase, formerly president of the y Development Bureau of Chicago, has be- ne manager of the Membership Department l Members Council of the Association of mmerce of New Orleans, La.

Howard B. Cox has been elected secretary the Ozona, Texas, Chamber of Commerce.

Thorndike Deland, 1st Lieut. 340th Field tillery, has received the Distinguished Serv- War Cross from General Pershing for ex- ordinary heroism in action near Marimbois rm, France. Before entering the military vice, Lieut. Deland was secretary of the nver, Colo., Civic and Commercial Associa- n.

M. J. Duryea has been elected secretary of reorganized Chamber of Commerce at El- a, N. Y.

Luther Ellison has resigned as business nager of the Jonesboro, Ark., Chamber of mmerce, to enter the mercantile business.

Henry T. Farr has been elected secretary of Phillipsburg, Pa., Chamber of Commerce.

. F. Gallap has been elected secretary of Clinton, Okla., Chamber of Commerce, ceeding E. E. Saylor.

Thomas Grant has tendered his resignation ecretary of the Washington, D. C., Chamber Commerce.

. R. Hauke is the new secretary of the amber of Commerce at Chinook, Mont.

Andrew Hedman has been elected secretary the Webster, S. Dak., Commercial Club.

V. C. Hollister has been appointed secre- y of the Waukegan, Ill., Chamber of Com- rce.

V. E. Holmes has been elected secretary of Wichita, Kans., Chamber of Commerce. Holmes was formerly secretary of the ux City, Ia., Commercial Club, and re- ned that position to become Community pervisor of the Chicago District of the Community Organization Branch of the Ordnance Department.

Stanley H. Hutchinson has been elected secretary of the Lake County Chamber of Commerce of Painesville, Ohio, succeeding Benjamin J. Brown. Before entering the United States Army, Mr. Hutchinson was secretary of the Franklin, Pa., Board of Trade.

F. W. Jensen has been elected secretary of the Manhattan, Kans., Chamber of Commerce, succeeding G. L. Baker. Mr. Jensen was formerly secretary of the Chamber of Commerce at Edgerton, Wis.

T. M. Kerbow has resigned the secretaryship of the Sulphur Springs, Tex., Chamber of Commerce, to accept the secretaryship of the Chamber of Commerce of Denton, Tex.

A. L. McWilliams has been elected secretary of the Greenfield, Ohio, Commercial Club.

George C. Morris has been elected secretary of the Altus, Okla., Chamber of Commerce, succeeding A. S. J. Shaw.

C. A. Murphy has been elected secretary and treasurer of the Bellevue, Ia., Commercial Club.

M. P. Neighbor has resigned as manager of the DuBois, Pa., Chamber of Commerce, to accept the position of manager of the Altoona, Pa., Chamber of Commerce.

M. J. Norrell is the new secretary of the Santa Anna, Tex., Chamber of Commerce.

J. J. Novak has been elected secretary of the Commercial Club at Wilber, Nebr.

O. T. Olson is the new secretary of the White Butte, S. Dak., Commercial Club.

H. J. Overturf has resigned the secretaryship of the Bend, Ore., Commercial Club.

J. Frank Quinn is the new secretary of the Warren, Pa., Chamber of Commerce.

L. M. Rheem has resigned as secretary of the Helena, Mont., Commercial Club, to engage in other business.

A. R. Spearow has been elected secretary of the St. Helens, Ore., Chamber of Commerce.

John Stevenson has resigned the secretaryship of the Stratford, Ont., Board of Trade. He is succeeded by Frank Macklin.

Clarence Walters has resigned as secretary of the Brownwood, Tex., Chamber of Commerce, to enter the oil business.

Porter A. Whaley has resigned as secretary of the Brownwood, Tex., Chamber of Commerce, to accept the secretaryship of the Wichita Falls, Tex., Chamber of Commerce. Mr. Whaley succeeds B. F. Johnson, who resigned to enter the oil business.





FISK SOLID TIRES

—dependable

TRUCKS can't afford to lose time.

Minutes count in the delivery of merchandise.

Good tires prevent delays.

Dependable tires are built to wear, and meet the rugged conditions encountered in actual use.

Fisk Solids are dependable—you buy them with confident knowledge that you are making a wise and permanent investment.

THE FISK RUBBER CO.
of N. Y.

Chicopee Falls, Mass.

Electric Signs That Speak for Cities

By Arthur W. Park

WHAT steps are being taken to let the outside world know that your city is something more than a dot on the map? Is there anything about your town which commends itself to the world in general? These are questions which are constantly recurring to progressive city officials and to business men everywhere.

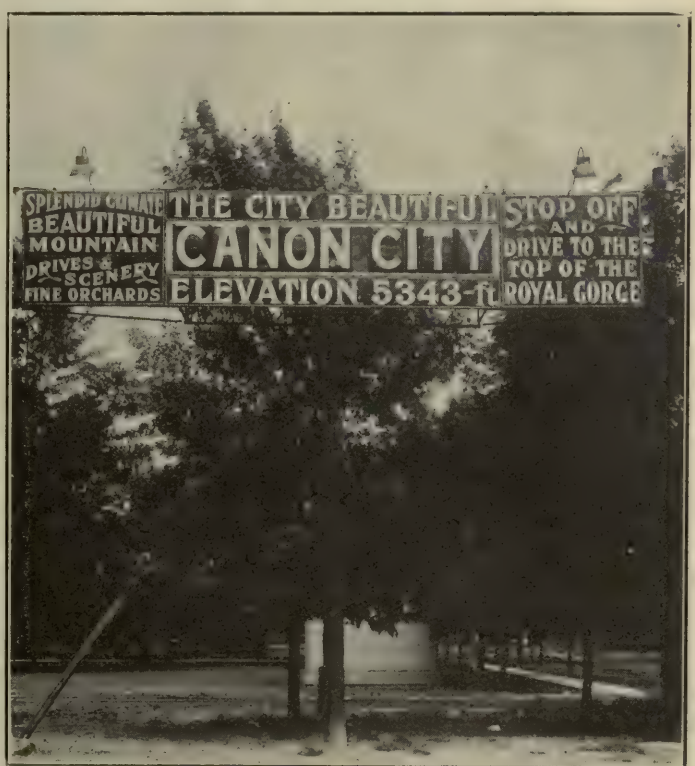
The value of advertising needs no defense. Thousands of dollars are spent every day to produce thru advertising a specific psychological effect which will assist in the marketing of a particular product. But it is surprising how little is being done to apply this business principle to municipal affairs; how small is the effort which, until the last few years, has been made to "sell" a city to the rest of the world, particularly when the business success of the city may be dependent in large measure upon the reputation the city enjoys in its field of operation, be it large or small.

There are, however, a number of cities which are paying a great deal of attention to first impressions as a municipal advertising asset. They are attempting to create favorable first impressions among travelers and visitors, which may be passed on, thus establishing a good reputation for the city outside its immediate vicinity.

One of the mediums thru which this is being accomplished is the electric sign. Cities are having these signs placed at railroad stations, emphasizing the good points of the municipality and giving bare outlines of its advantages. Cedar Rapids, Iowa, Canon City, Colo., and Sapulpa, Okla., are examples of cities which have recently adopted the plan of electric sign advertising.

The psychology of the situation is plain. Travelers along well-beaten paths of transportation invariably crane their necks to read the dim, dirty and often badly-lettered sign on the station, which says: "Hopkinsville; Chicago 91 miles, St. Louis 47 miles." There is nothing distinctive about such a sign. Scores of them, each exactly like the rest, may be seen in a day's journey. There is nothing in the sign to make the observer, be he laborer or capitalist, remember Hopkinsville.

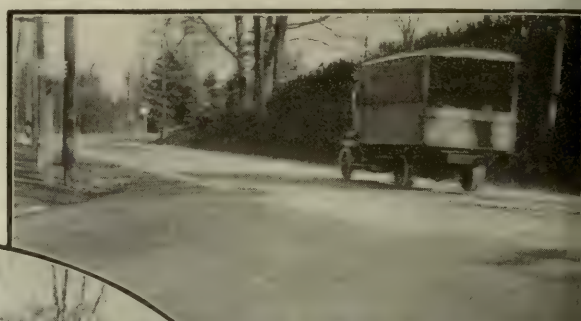
But an attractive electric sign, constructed to work with equal efficiency day or night, is an entirely different matter. Consider a sign like this:



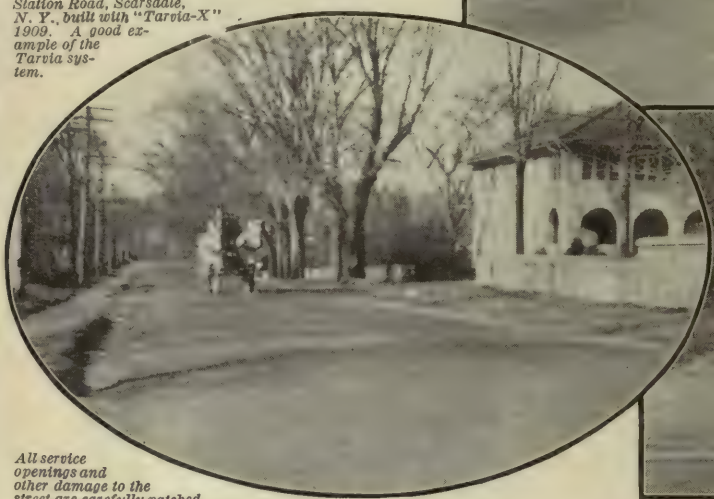
MUNICIPAL ADVERTISING THAT INSTRUCTS AND ATTRACTS THE TRAVELER

Tarvia

Preserves Roads
Prevents Dust -



Station Road, Scarsdale, N. Y., built with "Tarvia-X" 1909. A good example of the Tarvia system.



All service openings and other damage to the street are carefully patched with "Tarvia-KP." The shape and contour are as good as when first laid in 1909.



Upper view shows intersection constructed with "Tarvia-KP." Lower view shows "Tarvia-KP" patching on road maintained with "Tarvia-B."

Have You Discovered "Tarvia-KP"?

Every few weeks another road authority of some city or town or village *discovers* "Tarvia KP" (Kold Patch) the remarkable bituminous road-patching material that can be used *at any time of the year.*

Now it's Scarsdale the beautiful residential village in Westchester County New York. On October 29th, 1918 Franklin Henshaw, Street Commissioner of Scarsdale wrote:

> "I regret that I did not 'catch on' to the real value of 'Tarvia-KP' until this year, as I have used over 16,000 gallons of other materials for patching each year, except 1918, when I used 8,000 gallons before trying KP. While the patching material used has been good, 'Tarvia-KP' is better and far more economical, as with 5,000 gallons of 'Tarvia-KP' I have put in very nearly as much patching as I did with 8,000 gallons of other material. Now, next time you run up against a fellow who thinks he has the best there is, make him take a barrel of KP and show him how to use it. You will have a new customer, as KP works easier—goes further and makes as good a patch as anything I have ever used. Result —much cheaper and quicker patching from saving in labor."

The time is approaching when the damage caused by the inroads of winter on macadam and bituminous highways and streets must be repaired.

NOW is the time to "catch on to the real value of 'Tarvia-KP'."

Small holes filled promptly with "Tarvia-KP" patches will save many dollars of expensive repair work later on.

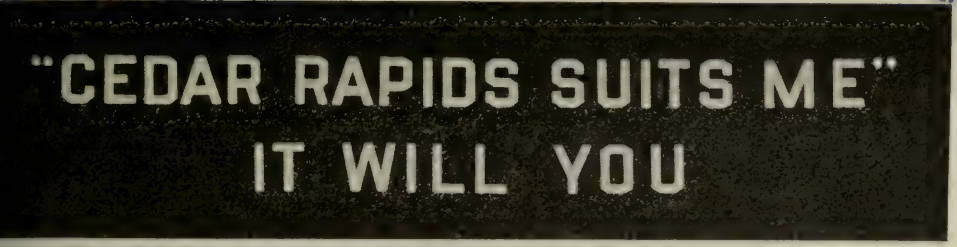
"Tarvia-KP" can be ordered NOW. Freezing won't hurt it; it can be used even in the winter, whenever the roads are free from snow.

Write our nearest office for free booklet showing each step in patching a road with "Tarvia-KP."

Write for illustrated booklet and further information.

New York Chicago Philadelphia **The Barrett Company** Boston St. Louis
Cleveland Cincinnati Pittsburgh Detroit Birmingham
Kansas City Minneapolis Dallas Nashville Salt Lake City Seattle Peoria
Atlanta Duluth Milwaukee Bangor Washington Johnstown Lebanon New Orleans Youngstown Toledo
Columbus Richmond Latrobe Bethlehem Elizabeth Buffalo Baltimore
THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

PHILLIPS UNIVERSITY LIBRARY



AN ELECTRIC SIGN THAT WELCOMES THE TRAVELER AS HEARTILY AT NIGHT AS BY DAY

There is deep psychological appeal in ch a sign as the following, which is im- rtant when it is remembered that every rson who reads the sign is a potential con- ibutor to the prosperity of Hopkinsville:

HOPKINSVILLE, ILLINOIS.

Population 28,444 and still growing.

The reader's impression is that Hopkins- lc is boasting because it has something to ast about. Forever afterwards he asso- ıtes Hopkinsville with that electric sign d its air of prosperity.

A town that shuns publicity never gets ry far as a town. According to reports ıde recently by analysts employed by one of the largest electric sign manufacturers, electric advertising for towns and cities is bringing direct results from the outside, in addition to reminding the citizens themselves that they have something to be proud of in the way of municipal advantages. An electric sign may not be as important as the new municipal water-works, but it attracts more attention from travelers.

Thru the hypothetical electric sign quoted, the impression goes abroad in the land that "Hopkinsville" is growing and presents business possibilities. The town fifty miles away, with no electric sign, remains a dot on the map.

Home Rule in Texas

N a paper recently prepared by Albert A. Long, Secretary-Treasurer of the League of Texas Municipalities and cretary of the Bureau of Municipal Re- ırch of the University of Texas, the fol- ving summary has been given of progress Texas cities under the home rule amend- nt to the constitution:

The municipalities have been very active in ıending and adopting their charters under e grant of home rule power. Thirty-one ies[2] have adopted new charters, and only ree[3] cities have rejected proposed charters. Twenty-six cities[3] have amended their char- rs, while proposed amendments have been feated in eight cities[4]. Eight cities[5] have opted new charters and also passed amend- nts. Some of the amendments were passed fore and some after the adoption of the new arters. Almost every city of any size, ex- ɔting Fort Worth, has taken action under e home rule provision. But the uncertainty the population of many small cities that ve in the neighborhood of 5,000 inhabitants nders it impossible to ascertain just what r cent of the eligible cities have availed them- ves of the privileges of the home rule laws. Home rule in Texas has proved almost uniformly satisfactory. A few reports of dissatisfaction have been heard. The fault, however, lies not in the machinery of legislation provided by the home rule act, but in the nature of the regulations the people have imposed upon themselves by popular vote. The voters have the right to remove undesirable laws by the same process that such laws were enacted. The consensus of public opinion indicates that home rule for the cities is very desirable and highly satisfactory. The greatest menace to local municipal legislation to-day is the inclination of the Legislature to pass, under the guise of "general laws," detailed and cumbrous statutes upon municipal subjects of a purely local nature.

1. Amarillo, Belton, Brownsville, Brownwood, Bryan, Childress, Cleburne, Corsicana, Del Rio, Denton, Eagle Pass, Electra, Ennis, Houston, Kingsville, Lubbock, McKinney, Mineral Wells, Orange, San Angelo, Sherman, Stamford, Sweetwater, Taylor, Tyler, Vernon, Waco, Waxahachie, Weatherford, Wichita Falls, Yoakum.
2. Lufkin, Paris and Temple.
3. Abilene, Beaumont, Bonham, Brownwood, Cleburne, Dallas, El Paso, Gainesville, Galveston, Hillsboro, Houston Heights, Houston, Kingsville, McKinney, Marlin, Marshall, Mineral Wells, Palestine, Port Arthur, San Antonio, Sherman, Sulphur Springs, Terrell, Texarkana, Victoria and Waco.
4. Dallas, Denton, Elgin, Galveston, Paris, San Angelo, Sherman and Temple.
5. Brownwood, Cleburne, Houston, Kingsville, McKinney, Mineral Wells, Sherman and Waco.

TRADE MINWAX MARK

STRUCTURAL INSURANCE

"Permanent improvements" are permanent only in so far as they are protected against the destructive effects of time and the elements. Whether the structure be of concrete, brick, stone, steel, or wood—whether it be sub-level or above-grade—there is a **"Minwax"** Product that will give it **Permanent Protection** at the lowest cost per year of service. Conserve your investments by adopting **"Minwax"** Structural Insurance. Write for Bulletins 11, 12, 13 and 14.

MINWAX COMPANY, INC., 18 East 41st Street, New York

Chicago Pittsburgh Portland Cleveland Seattle Detroit San Francisco Baltimore Los Angeles Cincinnati



Influenza—Destroyer and Teacher

A General Confession by the Public Health Authorities of a Continent—Reprinted by Permission from *The Survey*

By George M. Price, M. D.

IT is but natural that influenza should have been foremost in the thoughts and in the discussion of the more than one thousand health commissioners, administrators, officers and workers of the country who gathered recently in Chicago for the meeting of the American Public Health Association. These health workers, "the greatest life-saving crew in the civilized world," as President Hastings of Toronto designated them, had gone to Chicago for light on the subject of utmost interest to their communities, which include not only the great cities, but the villages of the whole United States. They were all eager to find out "if the influenza epidemic should be repeated next year, shall we be able to face our people and say we are ready?" They came to organize themselves against the invisible foe—the plague that has within less than twelve weeks carried off over four hundred thousand persons in death in this country, has caused a national loss of ten million years of life, and an economic waste of more than three billions of dollars. Nor is the danger over. The epidemic has not entirely passed, and recrudescence may be expected at any time in many communities and in different parts of the country. The opinion was current that we may surely expect next year a repetition in a form more or less severe; there were some who predicted that next year will be much worse than this and may cause three-quarters of a million deaths in this country from influenza and the ailments which it induces.

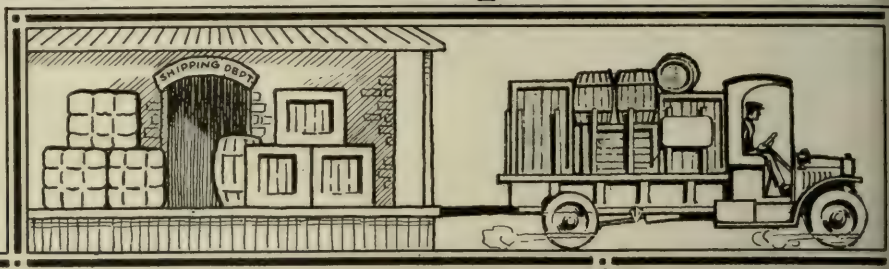
It is unfortunate that more light was not shed upon this most absorbing problem of the hour. In spite of the number of the health authorities present and in spite of the very prolonged and, at times, very heated discussions by those directly dealing with the disease and having the greatest experience with its control—in spite of the numerous committees appointed to sift all data and, if possible, bring in an authoritative report—one could but come to the conclusion that the health authorities themselves are not clear where they stand, nor what is to be done.

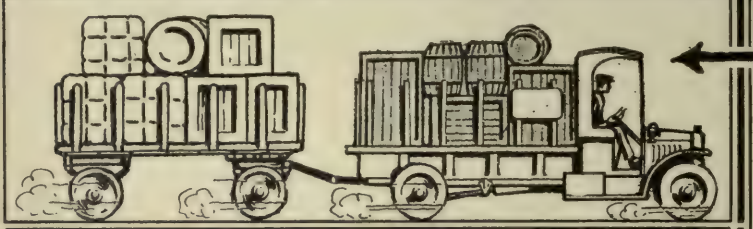
In discussing the causes of influenza, the doctors one and all have, with becoming humility, recognized and freely expressed the fact that the cause is unknown, that we are in the dark as to the invisible germ causing the disease, and that we may as well admit it and call it the "x" germ for want of a better name. The Pfeiffer bacillus of influenza has repeatedly been found in the respiratory secretions, but it cannot be said to be the sole cause, as it is frequently absent; and there have been found, according to Park, seven distinct strains of micro-organisms, each of which may or may not have been the causative factor of the disease.

What are the known methods of transmission? How is the disease carried from person to person? What are the vehicles by which it travels and affects one community after another? More positive data were presented in answer to these questions, and a definite stand was taken by those present as to the mode of transmission. The consensus of opinion was that, whatever the cause of the disease, it is to be found in the respiratory secretions of the nose, mouth and throat of those who are sick; that the infection is spread by droplets diffused by sneezing and coughing, and that it is a hand-to-mouth infection, which travels by direct contact from person to person.

It is likewise agreed that the disease confers a certain immunity upon those who recover from it, and that the reason why so many persons over forty years of age escaped the infection was because they must have passed through the epidemic of 1889. A valuable proof of this contention was given to me by Vilhjálmur Stefansson, the well-known Arctic explorer, whom I met on the train coming from Chicago. He informed me that influenza was especially fatal among the Esquimos in Alaska; that according to his own knowledge, out of 300

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Esquimos at Nome, Alaska, not less than 176 had died up to two weeks ago, and that in all probability an additional number have succumbed since then. Of the eight Esquimos whom he brought with him from the Arctic region to Alaska, seven died of the disease. He ascribes the susceptibility of the Esquimos and the fatal results of their infection to the fact that this is the first time that they have made the acquaintance of influenza.

"When Doctors Disagree"

The most heated discussions were of course devoted to the paramount questions of how to control the disease, how to treat it and what steps to take for the prevention of its spread and recurrence. It was in the discussion of these questions that the total bankruptcy of the present health administrations in the country appeared in full light and was admitted over and over again. In a general way it was freely confessed by all that we are at sea as to the proper methods of treatment, cure and prevention; that we do not know as yet how to prevent and control the spread of the disease, and that most of the methods employed in fighting it, tho pronounced efficacious by some of their adherents, have been held of little value by others.

The methods employed against influenza may be roughly divided into two groups; methods of individual care and prophylaxis, and community health control.

Of the measures of individual care and prophylaxis, the following were mentioned as important: isolation, medical treatment, the wearing of masks, and vaccine therapy.

The isolation of every person suffering from influenza was regarded as one of the best methods of guarding the patient against subsequent infection by the pneumococcus germs and a means of controlling the spread of the disease to a large number of persons with whom he would have come in contact were he not isolated.

The best method of treatment is to keep the patient in bed for several weeks—indeed for a number of weeks after apparent recovery. This was considered essential for the prevention of the most frequent complication of influenza—pneumonia. It was pointed out by many that they have yet to know of a death of an individual who, as soon as he felt the symptoms of influenza, took to his bed and stayed there.

The value of masks was the subject of heated debate, but no conclusions were arrived at. "If the mask was a preventive," said Colonel Cummings of the army, "it was more as a barrier between the hand and the mouth than a protection against direct contact." The ordinary gauze mask was characterized by many as a snare and a delusion and as giving a false sense of security. As worn in the epidemic, the ordinary mask could not prevent the spread of the droplets and was totally inadequate for the purpose. However, the value of the mask as a protection against fear was repeatedly admitted and, as Dr. Robertson, health commissioner of Chicago, expressed it: "It is our duty to keep the people from fear. Worry kills more people than the epidemic. For my part, let them wear a rabbit's foot on a watch chain if they want it, and if it will help them to get rid of the physiological action of fear."

As we have to deal with a disease germ which is unknown, and, in all probability, with a string of germs of various characteristics, there does not seem to be any scientific basis for a proper vaccine therapy for the disease. As Dr. Park, of New York, expressed it, "one cannot fight an unknown germ by means of known germs." On the other hand, many of the health officers testified that the use of vaccine had an appreciable effect upon the disease, not as a curative agent, but as a prophylactic measure. Dr. Lipman, of Swift & Company, said that out of 4,000 employes whom he vaccinated, not one contracted the disease, while among a smaller number who were not vaccinated several cases occurred. Most of the experience with vaccine therapy was with the vaccine made by Dr. Rosenow, of the Mayo Foundation, at Rochester, Minn. The greatest value of vaccine therapy was in the fact that it reduced *fluphobia,* as it has been clearly demonstrated that worry and fear had to be controlled during the epidemic.

Control by Social Action

The community measures for the control of influenza may be summed up in the following: reporting, placarding, prevention of overcrowding, provision of medical and general relief, and public education.

Reporting is, of course, regarded as of distinct value, but no reliance can be placed upon the figures gained through the report-



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g of the disease by physicians. In many ates and communities the ordinance for mpulsory reporting came when the epi- mic was almost over. Furthermore, it as pointed out that a great many physi- ans, because of the stress of their work, ere physically unable to report all their ses; that there were, moreover, thousands cases which were not treated by physi- ans, all of which would greatly swell the ures if they were known. The most re- ble figures of the epidemic are the death cords. It is impossible to know the total mber of infected cases in all com- unities.

Placarding the apartment or house where ses of disease occurred was declared to of no value whatever to the patient or the community. It was hardly possible carry it on conscientiously, and, if all the ses had been placarded, practically every use should have been included in many mmunities.

Prevention of overcrowding was re- rded as the most important measure in e jurisdiction of health officers. It seems asonable to think that if the disease is read by contact and by coughing and eezing, the surest method of control is the prevention of overcrowding and mmunity congestion. The testimony of rious health officers as to this measure of ntrol seemed to vary greatly. No decision s arrived at as to the real value or lack value of the methods adopted by various alth commissioners. One after another them testified that the effect upon the demic was negligible whether the the- rs, stores or schools were closed or not; t some communities, for instance De- it, had suffered less without a closing linance than others, like Buffalo, where erything was closed tight. It was also ed that in Philadelphia the explosions of disease increased by leaps and bounds ht after the closing ordinances and or- s, and that in many other communities closing of schools, recreation centers l other places was followed by a great rease in the number of cases.

Of course, there was hardly any uniform- in the closing orders of different com- nities. While some closed up movies and t the theaters and operas open, others sed schools and left department stores le open—indeed, in very few communi- ties has the closing been absolute so as to stop transportation as well as industrial activities. It was emphasized that the closing of theaters and movies was of no avail without the simultaneous closing of stores and large industrial establishments. Dr. Robertson claimed that the value of closing theaters and movies was in giving the people more time for sleep, and thus reducing the infection. However, one of the health officers present facetiously remarked, "If sleep is such a valued therapeutic measure, why was Philadelphia so badly stricken?" Dr. Royal S. Copeland claimed that it would have been very unwise to close the schools in a big city like New York, with its 800,000 children, several hundred thousand of whom live in overcrowded tenement houses. Moreover, he claimed that the schools could be used as educational health centers thru which health propaganda could be carried to the tenement-house dwellers.

Prof. C. E. A. Winslow, of Yale, presented a resolution to the effect that school closing should depend on the size and educational standards of the community; that in large cities, with a dense tenement-house population and where effective measures for school inspection exist, the schools could be left open, while in rural communities, where there is a lack of proper inspection, the schools should be closed.

There is, of course, no question as to the value of proper provision of medical facilities and of a thoro organization of general relief. The need of hospital facilities, the organization of the medical profession, the mobilization of nursing resources and a concerted, intelligent, unified attempt to furnish medical aid to each individual in the community during the epidemic were declared to be essential.

The greatest method of prevention and control of the influenza epidemic is in public health education in its broadest sense. The most important measures, however, in the control of influenza as well as of other diseases are the reorganization of the health activities of communities, the placing of health control under unified command, a better coördination of public health agencies, a coöperation of private and community institutions and a thoro accord of municipal, state and Federal health authorities.

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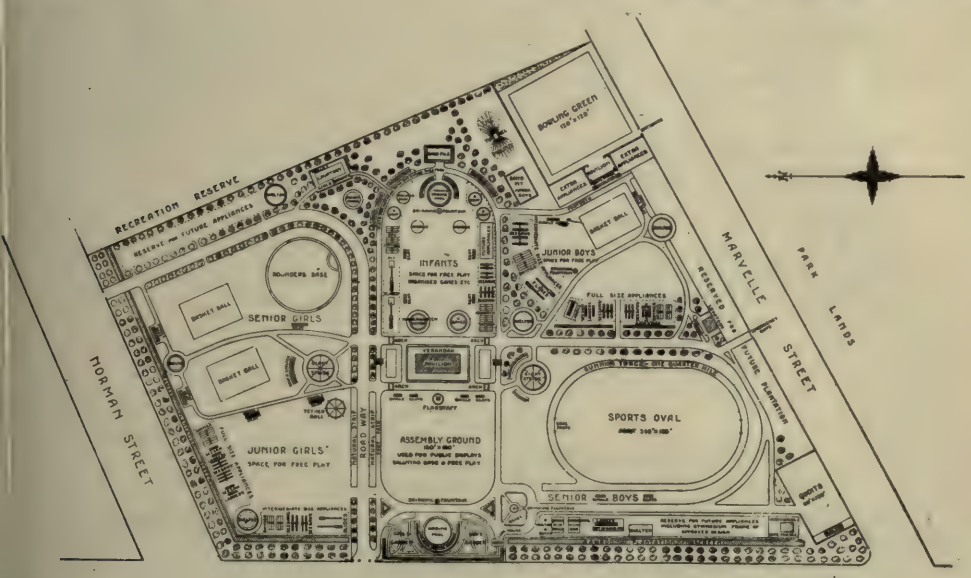
Building a Playground in One Day in Port Pirie, South Australia

THE building of a playground covering over ten acres of ground, with its full complement of equipment, and s completion in one day by 3,000 workers t Port Pirie, South Australia, marks a step orward by those interested in town plan- ing and civic welfare generally.

Port Pirie is an important seaport situ- ted near the head of Spencer's Gulf, 227 iles north of Adelaide by rail, where are melted vast quantities of tin, lead, and sil- er, mined at Broken Hill in the far in- erior. The town is one of a number of ommunities in South Australia planned in arlier days with a wide belt of park lands nclosing and separating the central area rom its suburban districts. Except for the riginal plan providing for streets 100 feet ide, little had been done towards meeting s problems in town planning or housing. trikes and industrial discontent had be- ome general. Increased rents and building osts had created overcrowding and poor ving conditions. These existing evils were ultiplied when war came, and with it the eed for increasing the output of munition inerals.

The Broken Hill Associated Smelters, Limited, is a new company with new ideas. Its members have a keen appreciation of the value of healthy, well-paid workers, properly fed and comfortably housed. This company has set to work to reduce the cost of living and to establish economic advantages and social amenities for its employes. Coöperative stores eliminating the middleman's profit, recreation clubs, hospitals and parks have been provided. The construction of houses has been started in accordance with plans for a model suburb designed by the Department of the South Australian Government Town Planner, C. C. Reade. The model playground was recently organized, and, with the assistance of 3,000 volunteer workers, was completed with brilliant success in one day. The company offered to provide the equipment, and the Town Council made available the necessary site.

The playground has a main entrance 43 feet wide, with stone columns and ornamental gates. To the right of the gates lie the boys' and girls' gardens, to be maintained by the children in competition. In



PLAN OF THE PLAYGROUND IN PORT PIRIE, SOUTH AUSTRALIA, WHICH WAS ERECTED AND COMPLETED IN ONE DAY

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he center of this section is a concrete wad-ng pool surrounded by comfortable seats or mothers and spectators. The principal ssembly ground is equipped with a flag-taff and seats for the purpose of public isplays. The main pavilion contains a ecture hall with movable walls, a kinder-arten, and a crèche, with wide verandas on ll sides. Separate grounds have been pro-ided for infants, junior and senior girls, nd junior and senior boys. Each section s equipped with suitable playground ap-aratus. In addition, a bowling green, a uoits ground, open air pictures and other musements have been provided for adults.

Extensive preparations were in progress revious to the final construction of the layground. For weeks there had been a tream of material pouring into the grounds o be in readiness on that day. Thousands f loads of sand had been carted in order o make the grounds passable in wet veather. Hundreds of trees had arrived, en, twelve and even thirty feet in height. arden soil had been transferred from the ore fertile parts of the town to the huge its which had been excavated to receive he palms; a large quantity of brick had een carted for use in the building of cer-ain houses. Gear and equipment had to be rought from the works, for in a depot here the great bulk of the assembling and reliminary work had been accomplished. ools were issued the day before, and also 00 gallons of paint.

The work of completing the playground and its scheme of road, pathways, shelters, pavilion and appliances was a great undertaking. At eight o'clock in the morning the place was a medley of timber, uprooted palms, carts, horses, plows, scoops, tools, policemen and people. By noon many hundreds of tons of earth, sand and gravel had been carted and spread. The waste of the park lands was transformed into an oasis of winding paths, fully grown trees, flowering shrubs and gardens. By six o'clock the playing appliances were all in position, the shelters completed, the fences and gates erected, electric lighting and water services installed and the big pavilion finished. The wading pools, gardens, games and courts were an accomplished fact. The night descended upon a great and complete work.

On the following day, in the presence of about 5,000 persons, the playground was formally presented to the Mayor as the trustee of the residents, by a representative of the Broken Hill Associated Smelters. Several clergymen of Port Pirie delivered addresses congratulating the townspeople and the workers of the Association upon the consummation of their labors.

The playground idea was an outcome of the First Australian Town Planning Conference and Exhibition held in Adelaide during 1917, when a full-sized playground properly equipped and supervised was one of the exhibits. A similar playground is now in course of preparation for the children living in the overcrowded portions of the city of Adelaide.

Food Shops Find That Sanitation Pays

We reproduce a letter recently addressed o the Surgeon General of the Public Health ervice by the proprietors of cafés, restau-ants and lunch rooms in Tacoma, Wash.:

"It is the opinion of the restaurant proprie-ors of the city of Tacoma, of which the un-ersigned represent the better class, and which njoy a very large proportion of the soldiers' rade, that some recognition of appreciation e shown the inspection given by the United tates Public Health Service for the help given and patience shown in bringing our establishments up to a higher standard of sanitation and of the care of food.

"We are free to state that at first we thought a great many of their requests were a little harsh and unjust, as it meant, in a great many cases, the reconstruction of our places and likewise equipments; but in a short time we realized it was for our own good, as well as financial gain, for prior to these inspections we had practically no one to show us corrections that were to our advantage."

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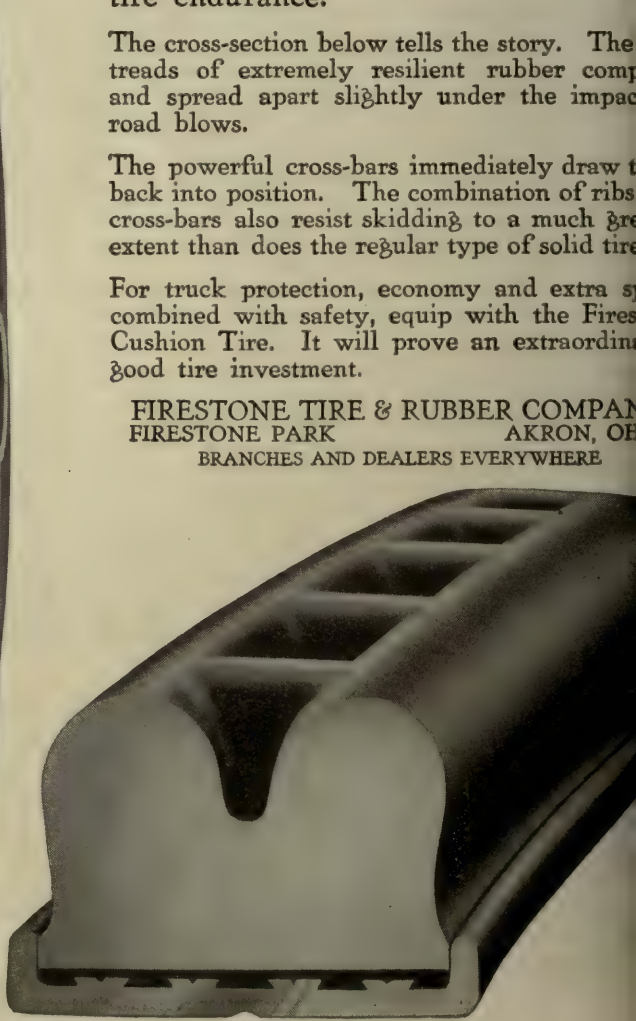
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There is, nevertheless, a paradox. In ttempting to extinguish a fire, a fire com-any may destroy ten or twelve times as uch property as would have been neces-ary upon the order of a fire prevention ureau official to prevent this very same re. The chief difficulty is, however, that ie hands of the fire prevention bureau are ed, while the fire extinguishing depart-ent is left free to destroy whatever it eems necessary toward extinguishing the re.

In many cases, to comply with the re-uirements of a fire prevention bureau, it ould be necessary to construct rather than destroy property. This is true because in fire prevention work there is plenty of time to exercise care and good judgment and to carry out the scheme with deliberation. If a city expects its fire prevention bureau to be as effective in the prevention of fires as the fire companies are in checking them when once started, the officials of these fire prevention bureaus must be accorded more freedom of action. This will not necessarily mean the enactment of more ordinances or legislation, but rather placing fire prevention work outside the rounds of political intrigue and free from the interference of the administration.

The fire prevention bureau, which is bound to obey the edict of some political organization and is told that it can do this, but must not do that, or that it must be inactive just before election, and which must consult the leaders of some political organization before taking any important action in fire prevention, is just as badly handicapped as a fire chief who must take orders from some lay official when he is



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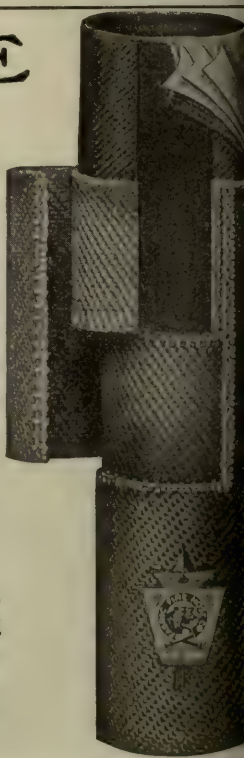
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ghting a large conflagration in a city. It is of primary importance that municil administration first select thoroly comtent officials for fire prevention work id, secondly, give them a free hand to clean up garrets, yards, lots and all other places where a spark might start a fire or where spontaneous combustion might be the beginning of a great conflagration.

Coöperation combats combustion.

Taxation as a Factor in Reconstruction

o THE EDITOR OF THE AMERICAN CITY:

The problem of employment for our rerning soldiers when peace is declared is ceiving considerable attention. With the unition factories closed and women in all nds of work, the problem is a serious ie. Of course, the Director General of ailroads might start things going by plac g orders for material for the railroads, t it would go a great deal farther if ere were a building boom in every ty. There would then be plenty of lol jobs, such as bricklaying, carpentry, umbing, plastering, and all that kind of ork that goes with house-building. Vorkers would also be required in fabricat g the materials and supplies necessary r such construction work.

A building boom would go a long way solving our reconstruction problems. hings that would stand in the way of such boom ought to be brushed aside. They ould be gotten rid of even if some of our lfishness is hit, for these boys have made crifices for us and we ought to be willing give up a little for them.

In every city speculative land values and in the way of a building boom. That rner lot you have been holding all these ars at an inflated value—you would hate see the price come down, wouldn't you? nd yet, with all the vacant land in a city ld at fictitious values, how can an investent builder succeed or a young chap just ck from the front get a small piece of round for his bungalow and his garden id chickens for his best girl? But one es not like to lower the price of his lot less all the other speculators do likewise. general reduction in the price of building ts would be a fine start for a building om. This reduction would come if land eculators should find it becoming more pensive to hold land idle. An increase in e land tax would do just this thing. So Pittsburgh will add 30 per cent to the rate on land when its councils fix the millage for 1919.

Another obstacle in the way of a building boom is a high tax rate on a house when it is completed. In fact, some towns can't wait till a house is completed before they start soaking the taxes on the poor unfortunate that had the temerity to build. One would think it was a crime to erect a house; he has to pay a fine every year for doing it, till the house is torn down or conveniently burns up. Fine way to encourage a building boom by fining the first man who tries to start it! A better way would be to lower the taxes on buildings so that there would be less of a burden on those who would build either for investment or for a home; in other words, let us remit the fine a little. Under the circumstances, it would be quite proper. Our boys need all these jobs that go with the building industry, and we will not stand in their way. So Pittsburgh, having raised the tax on lots 30 per cent, fearing that more money will come in than can be spent, will balance things up and at the same time help along that building boom by taking 30 per cent off the tax rate on buildings. Sounds reasonable.

We tax dogs to get rid of them. We tax saloons for the same reason; we do not like to have them around. But why do we tax buildings? Buildings are jobs, and we want all of those things we can get. It is the Pittsburgh idea that the pressure on the builder will be relieved by this plan of taxation—the land tax lessening the pressure of high prices from below and the lowered building tax relieving the overhead which burdens him from above. With this freedom, with this fairer treatment, the perils of peace can be met with light hearts.

WILLIAM N. McNAIR,
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They have produced *black tread rubber,* proven by test the toughest, most lasting rubber compound.

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Furthermore, the tread *extra wide,* spreads the safety bars to the side of the tire and carrying the tough rubber up, till it is overlapped by the side-strip, fortifies the sidewall where tires are naturally weakest.

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TIRES
"BEST IN THE LONG RUN

he City's Legal Responsibilities and Powers

Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

For special assistance in ascertaining the law, statutory or judicial, on any legal question ing to municipalities, address Legal Department, THE AMERICAN CITY, *Tribune Building, York City.*

gent Impounding of Water

he construction and maintenance of raulic, or similar work, a municipality uired to use ordinary skill and fore- o prevent injury to others in times of to be reasonably anticipated; and if be caused to a private property thru negligent violation of this duty e city, it is liable, altho there may been some other concurring cause, s an act of God involved in the flood. here injury to private property is at- ible directly to an extraordinary the municipality is not to be held (Ohio Supreme Court, City of Piqua lorris, 120 Northeastern Reporter,

✣ ✣

nation in the Schools

power of the state board of health to a rule requiring school children to h certificates of successful or recent ation or immunity from smallpox be- hey may be permitted to attend school pheld by the Arkansas Supreme Court case of State vs. Martin, 204 South- rn Reporter, 622.

decision of the Court disposes of lidated appeals in two prosecutions ht in different counties of the state on nt of the several defendants having tted children to attend school without ying with a rule adopted by the nsas State Board of Health along the above mentioned.

s held by the Court that the Board, in ing the rule, did not exceed the power l in it under the statutes of the state; that, construed as authorizing the l to adopt such a rule, the statutes not unconstitutional as involving a ation of the powers of the Legislature to legislate; the Board being merely empowered to determine, as a fact, whether circumstances bearing on the public safety warrant adoption of measures designed to avoid spread of contagious diseases.

And it is decided that, on its appearing that smallpox was prevalent in the state, the Board was warranted in adopting the rule for state-wide application, altho there might be no imminent danger of the epidemic reaching particular communities.

Other important points ruled by the Court are that a health measure of this kind is not to be regarded as an infringement of the constitutional right of children to attend school, nor as invading the province of school authorities to control the schools of the state.

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City Negligence in Electric Wiring

When a municipality owns and operates an electric light plant, supplying current to private consumers and engaging in the wiring of private buildings, it is liable for negligent wiring the same as a private electrical contractor. (North Carolina Supreme Court, Smith vs. Board of Commissioners of Lexington, 97 Southeastern Reporter, 378.)

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Validity of Motor Vehicle Regulations

Charter authority to a city to regulate the driving of vehicles on its streets, etc., supports an ordinance of the city of Cedar Rapids, giving automobiles driving along avenues right of way over those proceeding along intersecting streets. The regulation is not invalid as conflicting with the Iowa motor vehicle law's provisions relating to rights of way. (Iowa Supreme Court, Seager vs. Foster, 169 Northwestern Reporter, 681.)



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Municipal Election Notices

A statute requiring notice of a municipal election for the submission of specific propositions to be published "at least once a week for a period of four successive weeks next preceding the date upon which the election is to be held" was complied with, as to an election held June 1, by publications May 2, 9, 16, 23 and 29. And a notice of an election on a question of annexing territory sufficiently apprised the electors in the annexed territory concerning the city's outstanding bonds, without more specific description of the nature and purposes of the bonds, where it specified: "Water-works bonds issued in 1905. Water-works bonds authorized June 12, 1907, in the sum of $23,000,000, etc." (California Supreme Court, Fostler vs. City of Los Angeles, 176 Pacific Reporter, 438.)

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Municipal Regulations Against German Language

A resolution of a municipality purporting to forbid the circulation of newspapers published in the German language is void. It cannot be justified under the police power as tending to prevent disorder arising from circulation of such newspapers. Nor can it be upheld as a legitimate war measure, as such measures are to be taken by the National Government. (New Jersey Court of Chancery, New Yorker Staats-Zeitung vs. Nolan, 105 Atlantic Reporter, 72.)

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Injury to Fire Department Employe

A city not being liable for injury caused by one of its officers in the discharge of a governmental duty, a fireman, injured while driving a fire engine from a temporary shed to a fire barn because of lumber projecting over the opening of the door to the shed, could not recover against the city on the ground that the fire chief was negligent in housing the engine. (Mississippi Supreme Court, Geigor vs. City of Hattiesburg, 79 Southern Reporter, 846.)

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Sunday Closing Ordinances

An ordinance of Union, N. J., requiring certain classes of stores to close on Sunday is not invalid because not directed against other classes which might have been also included. (New Jersey Supreme Court, Schachter vs. Hauenstein, 105 Atlantic Reporter, 13.)

Injury to Children in Street

A city maintaining open ditches and a wooden culvert conducting drainage water from convergence of ditches at a street corner to a point diagonally across the intersection of the streets, which drainage was inadequate, was not liable for death of an unattended child about four years old, who fell into ditch and was drawn into culvert and drowned, by reason of its failure to have a grating at end of culvert. Municipal corporations cannot foresee or guard against all dangers incident to the rashness of children and are not insurers of the lives or safety of children. Municipal authorities may presume that for every child under the age of discretion there is some one of mature judgment on whom rests the special duty and responsibility for the safety of the child. (Louisiana Supreme Court, Biegel vs. City of New Orleans, 79 Southern Reporter 867.)

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Right to Forbid Prize Contests

An ordinance of the city of Covington, Ga., purporting to forbid merchants from offering prizes or gifts to induce purchases is void as being without specific charter authority, and as not being authorized under the municipality's powers to provide for the general welfare. (Georgia Supreme Court, Commercial Security Co. vs. Lee, 97 Southeastern Reporter, 516.)

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Condemning Private Property for Sewers

Proceedings by the city of Atlanta to condemn private property for sewer purposes were void where there was no ordinance adopted in the first instance as a basis for the proceedings. (Georgia Supreme Court, Suburban Investment Co. vs. City of Atlanta, 97 Southeastern Reporter, 542.)

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Rights in Sidewalks

Regardless of whether a city holds absolute title to the land occupied by a street or a mere right to use it for street purposes, an abutting lot owner has no right to excavate under the public sidewalk or street surface nor to maintain an areaway in the sidewalk space, without securing permission from the city. (North Dakota Supreme Court, Kennedy vs. Fargo, 169 Northwestern Reporter, 424.)



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Mayor's Failure to Take Oath

The mere fact that a mayor had failed to take the oath of office before entering upon his duties did not invalidate his official acts nor diminish his legal rights and powers as such officer. Hence, an ordinance was not void because he signed it without having taken the oath of office. (Mississippi Supreme Court, Town of Sumrall vs. Polk, 79 Southern Reporter, 847.)

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Municipal Liability to Contractors

When a city awards a contract for the construction of a public improvement it impliedly warrants to the contractor that the site will be placed in his possession without obstruction, the same as in the case of private construction contracts. Hence, where a city awarded a contract for the building of sewers, but had failed to acquire right of way over certain land, as contemplated by the contract, the contractor was entitled to recover damages resulting from his being delayed in the completion of his contract. (United States District Court, Northern District of Ohio; Casey vs. City of Canton, Ohio; 253 Federal Reporter, 589.)

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Annexation of Territory to a City

New territory may be annexed to a municipality by special act of the state legislature, except as there may be some constitutional limitation to the contrary. (Virginia Supreme Court of Appeals, Town of Strasburg vs. Chandler, 97 Southeastern Reporter, 313.)

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Rejection of City Hall Sites

The choice of a site for a city hall by a California municipality was such legislative act as was subject to ratification or rejection on a referendum of the question to the electors of the city. And, the electors having rejected the proposition, one who donated the site to the city has no standing in court to enjoin a removal of the city offices from that location nor to restrain the making of a contract for the erection of a city hall on another and approved site. In making the donation of the site and certain agreements pertaining thereto, the grantor of the site is presumed to have known that under the law the electors might reject it. (California District Court of Appeal, Harbor Center Land Co. vs. City of Richmond, 176 Pacific Reporter, 50.)

Crossing Railroads at Grade

The city of Miami, Fla., having acquired the right to lay out a street across a railway company's right of way, in consideration of the city's binding itself to bear all expense involved in protecting persons and property against collisions with trains, etc., at the crossing, could not afterward shift to the railway company the duty of guarding that crossing by adopting an ordinance requiring railway companies to maintain and operate safety gates at all street crossings along their lines. (Florida Supreme Court, Florida East Coast Railway Co. vs. City of Miami, 79 Southern Reporter, 682.)

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Local Assessments Against Cemeteries

A tract of land being held by a cemetery company for exclusive use for burial purposes, it was improper, in levying an assessment against it on account of a municipal sewer improvement, to value the property according to other uses to which it might be put, e g,, residential purposes. "Where lands are restricted to a particular use by the owner, the benefits of a public improvement should not exceed the benefits to the land for the particular use to which it is restricted." (Illinois Supreme Court, City of Chicago vs. Rose Hill Cemetery Co., 121 Northwestern Reporter, 222.)

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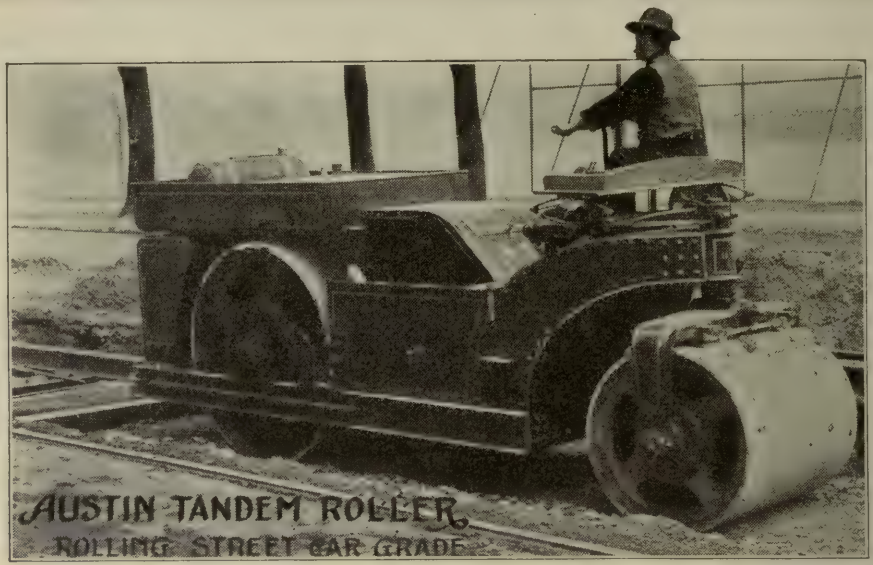
Construction Contract Construed

A contract for the construction of a village water system contained the provision: "It is expressly understood that the contractor agrees to pay all expenses, such as engineering, supervision, and inspection, that the village or its engineer may be put to by reason of the work not being completed at the time specified in the contract." It is held that this clause imposed no liability for engineering expenses incurred prior to any breach of the contract by the contractor. (Idaho Supreme Court, Village of Council, vs. United States Fidelity & Guaranty Co., 175 Pacific Reporter, 44.)

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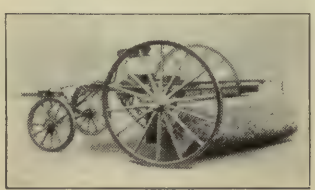
Deciding Vote of Burgess

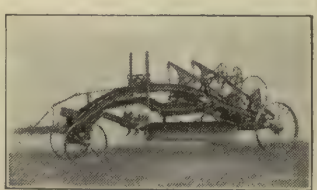
Under the Pennsylvania Boro Code of 1915, a burgess has the deciding vote where there is a deadlock at an organization meeting of the council. (Commonwealth vs. Kleeman, 10 Municipal Reporter, Pennsylvania, 11.)



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County and Municipal officers should write for the Austin Western catalogue No. 18. It is a handy reference book on all kinds of road machinery and explains the following Austin Western machines.

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CHICAGO

Branch Offices in 13 Principal Cities

The City Manager Movement

Edited by Harrison G. Otis
Secretary of the City Managers' Association

First Issue of City Manager Bulletin Appears

THE City Managers' Association has just issued the first number of its *Bulletin*. The circulation of this publication is limited to members of the Association and is devoted to passing on news items of especial interest to city managers. A list of 60 cities which are considering the adoption of commission-manager government appears in this *Bulletin*.

The appearance of this little sheet marks one more step in the recognition and development of the new profession. Active membership in the City Managers' Association is limited to those who have been appointed by municipal legislative bodies the administrative heads of such cities. At the fifth convention of the Association, held at Roanoke, Va., last November, an associate membership was provided for, open to any person interested in municipal progress.

More States to Permit Manager Government

There is every probability that city-manager government will soon be permitted to any city within the states of Indiana, Maine and Wisconsin. Bills making provision for the adoption of this plan are being introduced into the Legislatures of these states. A county-manager system is provided for in a tentative bill which may be presented to the Senate and General Assembly of New Jersey.

The Indiana bill, for which the Bureau of Governmental Research of the Indianapolis Chamber of Commerce is largely responsible, provides that any city may, by due process, adopt either the commission or the commission-manager plan. The Maine bill, inspired by the efforts of Waterville, Me., to secure a manager charter, has been introduced in the House by Representative Corliss of Bath.

The law-makers of Wisconsin have been considering such a step for some little time. Two years ago the Bray bill came before the Senate and is reported to have been killed by "an overdose of amendments." Assemblyman Clark M. Perry of Oshkosh is fathering the new bill, which will be introduced in the lower chamber.

William H. Parry of Newark, N. J., is promoting the county-manager plan for his state. His proposals have been approved by the Federation of Improvement Associations of Newark. One of the unique proposals is that these county managers should be appointed by some state officer, perhaps by the State Commissioner of Charities and Corrections. This is a variation from the usual method of having the manager appointed by the local governing board, known in New Jersey as the Board of Chosen Freeholders. This feature, however, has not been definitely determined and may be eliminated in order to secure the adoption of the plan in general.

Chicago May Have Manager

A special Committee on State Legislation of the City Council has recommended a bill for the adoption of the city-manager plan. Salient features of the proposed charter changes are:

The appointment of a city manager.
Provision for the recall of the mayor and aldermen after one year.
Reduction of number of aldermen from 70 to 35, being one from each ward.
Four-year terms instead of two.

Alderman John A. Richert is quoted as stating that "the saving would be about $1,000,000 a year because of these bills."

These changes in Chicago's charter are a part of the "All-Chicago" program which was adopted December 20 at a meeting at the City Club by representatives of the Chicago Association of Commerce, the Chicago Bureau of Public Efficiency, the Citizens Association, the City Club, the Civic Federation, the Chicago Real Estate Board and the Woman's City Club.

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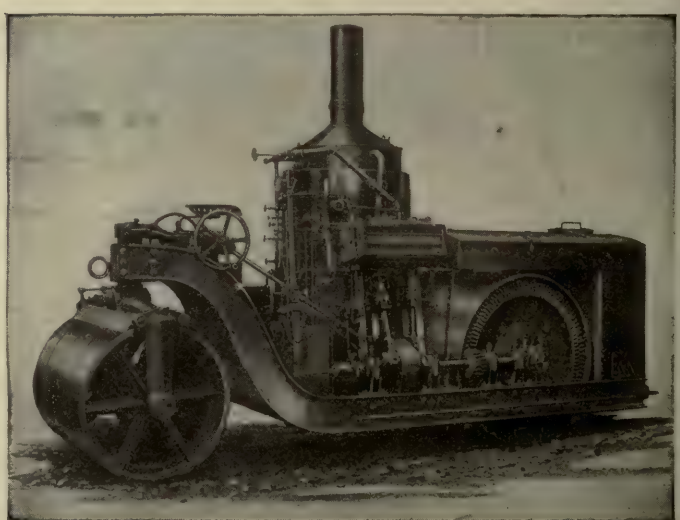
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Municipal and Civic Publications

MANN, EDWARD, member of Am. Soc. of C. E., Am. W. W. Assoc., N. E. W. W. Assoc., etc.

Conveyance and Distribution of Water for Water Supply: A Practical Treatise for Water-Works Engineers and Superintendents. vi + 652 pp. 367 illustrations. 8 plates. D. Van Nostrand Co., Publishers, 25 Park Place, New York. 1918. **$5.00**

other authoritative volume by the author of "The gn and Construction of Dams," which has long been ndard for engineers. The present volume covers reat progress in the distribution of water, the de- n and prevention of waste of water by means of tube gaugings and water meters, fire protection, pressure systems, tapping machines, valve inserting ines, water stage recorders, and the many other de- and appurtenances with which the water-works en- r and superintendent should be familiar. Broad in its , yet covering its field in detail, this book makes a ble reference volume for municipal officials re- sible for the economical and reliable operation of r-works distribution systems.

HNICAL JOURNALS, LTD.

Houses for Workers. 16 reading pages and 81 pages of photographs and architects' drawings. Technical Journals, Ltd., London. **$2.00**

ice the average rural settlement of to-day is a miscel- us hodge-podge of uncomfortable houses of all con- ble, and some inconceivable, types of architecture, the average urban district, with its dispiriting, mo- nous rows of ill-designed houses, is no less quieting e esthetic sense, any presentation of schemes for r housing, such as this volume contains, is of value. only does this book present original and pleasing de- for suburban homes, but, what is more unique in ing developments, it includes an attractive group of dwellings, rebuilt in accordance with a coördinated ne incorporating stores, a church and other com- l buildings. Those who planned this volume had aims in view,—comfort, economy and beauty in s for working-class families,—and their solutions of problems involved are presented in page after page awings, photographs and detailed plans of attractive, le homes.

MPSON, F. LONGSTRETH, and ALLEN, ERNEST G., members of the Town Planning Institute, London.

The Town Plan and the House: An Opportunity for National Economy. 41 pp.. Published by The Garden Cities and Town Planning Association, London. Illustrated. **38 cents,** postage extra.

is booklet is subdivided into three parts: (1) The In- ction, which demonstrates the fact that town plan- with a view to the future growth of the city is a towards economy in municipal expenditure; (2) The Plan, showing methods of preparing a plan to suit individual locality; and (3) The House, a chapter ed to the design of comfortable houses that will fill proper places in the general scheme. Diagrams and ings illustrate various phases of town planning, such traffic scheme, a park system, location of industrial distribution of schools and other public buildings, ng of number of houses to the acre, and artistic ing of houses, and gives also exterior and interior of nine dwelling houses designed for both comfort eauty.

WOODS, ARTHUR, Lieut. Col., U. S. A., formerly Police Commissioner of New York City.

Crime Prevention. 124 pp. Princeton University Press, Princeton, N. J. 1918. **$1.00**

This small volume does not claim to approach thoroness in treating the comprehensive subject of the prevention of crime, but it does show the policy of the New York Force developed under the admirable leadership of Lieutenant Colonel Woods when he was Police Commissioner of New York. Education of the public and the employment of all rational means to keep people from becoming criminals were the sensible weapons employed. The chapter subjects are: Conventional Methods, Educating the Public, Diminishing the Supply [of criminals], Poverty, Mental Defectives, Drink and Drugs, Convicts, and Juvenile Delinquency.

A strong appeal for reasonable methods in preventing crime in American municipalities.

JENKS, JEREMIAH W., Ph. D., LL. D., Professor of Government and Director of the Division of Public Affairs, New York University, and LAUCK W. JETT, former Associate Professor of Economics and Politics, Washington and Lee University.

The Immigration Problem. A Study of American Immigration Conditions and Needs. Fourth edition, revised and enlarged. xxv + 605 pp. Tables, maps, etc. Funk & Wagnalls Co., 354 Fourth Ave, New York. **$1.85**

During the period of the war, immigration to the United States practically ceased. With the return of peace the problem again comes to the front and is already making itself felt in the Halls of Congress. A few of the many subjects touched upon in this volume are: the causes of immigration; the characteristics of immigrants which affect American institutions; the social problem relating to manufacturing and mining communities, to agriculture, to industry and to living conditions; the problem of congestion; the special problem of the Pacific coast; agencies of protection, distribution and assimilation; the legislation on the subject, including the immigration law of 1917; and some suggested remedies for the conditions that now exist. In this edition there are included figures of immigration to our country for the first two years of the war and a short bibliography of some of the more important books on immigration with a few notes on each.

COHEN, JULIUS HENRY.

Commercial Arbitration and the Law. x + 339 pp. Appendices and bibliography. Published by D. Appleton, 35 West 32d St., New York. **$3.00**

When a committee of the Chamber of Commerce of the State of New York in 1911 recommended the plan of commercial arbitration which has since been in vogue, they revived an interest in the subject which began in that organization in 1781. Julius Henry Cohen, counsel of that committee, has gathered together in this volume the results of an intensive study of unnecessary litigation, business men's tribunals, the use of arbitration, clauses in contracts, the inadequacy of fines and penalties, etc.

The appendices contain material which will prove most helpful to any chamber of commerce desiring to establish commercial arbitration, as this material includes New York City practice, the Illinois law, the Chicago rules, and an excellent bibliography and index.

—wrote the Sales Manager to the Road Commissioner

LETTER No 3.

ECONOMY—Fuel being the largest item of expense in the operation of a tractor, it is natural to look here first for economy. And there are three sides to this question—first, the kind of fuel; second—how the tractor uses it; third, how much it uses.

There are two classes of liquid fuel universally available for tractor use. Gasoline, the highest in price, offers no economy. Kerosene, costing about fifty per cent less, gives a corresponding saving in fuel cost—provided the tractor will successfully handle it.

But to properly burn kerosene and lower grade fuels, a tractor must be especially designed. Real kerosene tractors are built from the ground up for the purpose, not "made over" gasoline burning machines.

Any tractor will burn kerosene when the engine is just the right temperature, and working at heavy load—so will an automobile. That kind of performance doesn't make a real kerosene tractor. What will the outfit do when working below half load, or when the engine is running idle?

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The "made over" gasoline tractor that burns more gallons of fuel is effecting no economy. The real kerosene burning engine must be so designed as to use the heavier fuel with no more valve trouble, dirt or carbon than is experienced with a gasoline burning machine.

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But, as if this were not enough, we give with every OilPull an absolute guarantee in writing that it will burn kerosene successfully under all conditions.

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"Fuel being the largest item of expense in tractor operation," he says, "it is natural to look here first for economy."

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ealth Almanac for 1919.

e United States Public Health Service has published alth Bulletin No. 98, an almanac for the use of all zens of the United States, in the hope that it may re- e the hundreds of patent medicine almanacs which are ally so widely distributed each year. There is a sepa- section of the almanac for each month, with health ts and notable events listed under each day. The al phases of the moon and the time at which the sun s and sets are also given. In addition to these data re are numerous articles dealing with health matters. h subject is presented concisely and in a manner to ng it to the attention of the reader. Among the many ses of health work dealt with are pneumonia, the pre- tion of venereal diseases, tuberculosis, smallpox vacci- ion, the filth fly, trachoma, rats, the care of milk in the ne, clean drinking water, care of the teeth, infantile alysis, malaria, facts of importance to parents, typhoid er, general suggestions for the care and feeding of ants, sewage disposal, pellagra, the need of full-time lth officers and the need of periodical physical exam- tions, hookworm disease, common colds, school inspec- , the hands as disease-spreaders, pasteurization of milk, htheria, prenatal care, the construction of the concrete lt sanitary privy, and a complete list of publications ting to these matters. These publications, as well as health almanac itself, may be secured from the Sur- n General, U. S. Public Health Service, Washington, C., without cost. The Good Health Almanac is of ticular value and benefit to health officers and munici- officials, inasmuch as it will provide material for pub- ty campaigns and suggestions for work in their com- nities. 43 pp.

eatment and Disposal of Industrial Wastes.

s pamphlet comprises studies on (1) The Treatment Disposal of Strawboard Waste, and (2) The De- nination of Biochemical Oxygen Demand of Industrial stes and Sewage. 86 pp. (Write for Public Health letin No. 97, issued by the United States Public Health vice, Washington, D. C.)

port of the Missouri Children's Code Com- mission.

comprehensive and constructive report has recently n issued by the Missouri Children's Code Commission, ointed in 1917 to revise and codify all state laws re- ng to children, for submission to the 50th General embly in 1919. The work of preparing the Code in- ved three processes: revising present statutes, repeal- obsolete or undesirable statutes, and recommending irely new legislation. 231 pp. (Apply to Miss Lucille Lowenstein, Executive Secretary, Washington Hotel, Louis, Mo.)

Motor Car Laws as Now Written.

The Touring Board of the American Automobile Association has published an eight-page pamphlet under this title dealing with the reciprocity principle in licensing motor vehicles. The states which have a year-'round open-door policy regarding reciprocity of registration are New York, Connecticut, Massachusetts, Alabama, Delaware, District of Columbia, Idaho, Iowa, Kentucky, Louisiana, Ohio, Pennsylvania, South Dakota, Vermont, Wisconsin, Arkansas, Florida and West Virginia. The remainder require that all vehicles entering their borders shall not remain longer than a period varying from two weeks to three months, and in a couple of instances six months, without taking out a local state license. The pamphlet gives a complete tabulation of registration and fees for passenger cars, cost of driving licenses, license plate, a summary of speed laws and regulations regarding lights for every state, as well as a summary of the fees for commercial vehicles in all states and in Canada. The last page of the pamphlet shows the standard international road sign and lists the twenty-nine traffic rules followed in most cities. This pamphlet may be secured from the Touring Board, American Automobile Association, Riggs Building, Washington, D. C.

Good Housing a Vital Question of the Reconstruction Period.

"To give the whole population the chance of living healthier and happier lives" thru a regeneration of housing conditions is the aim of the Town Planning Institute of London, England. The February issue of THE AMERICAN CITY contained a brief resumé of the recently received volume of Proceedings of the Institute for 1916-17, and the addresses and discussions of two of the 1918 meetings, on October 4 and November 1, are now procurable. The last-named reports, included in Volume V, Nos. 1 and 2, contain the President's address, giving in broad outlines the present needs and future plans with regard to this important and pressing problem, a paper by Percy B. Houfton entitled "Housing Schemes," which is full of valuable and practical suggestions, and the discussions on this paper, which are equally rich in helpful, suggestive ideas. 40 pp. (Published by the Town Planning Institute, 4 Arundel Street, London, W. C.)

Population of the United States.

The Bureau of the Census has recently issued Bulletin 138 giving the estimated population of the United States for each year from 1910 thru to 1917, including the results of state enumeration made in 1915. The statistics are arranged by cities, by states and by counties. This is a valuable publication that should be in the hands of mayors and city clerks for the sake of comparing their cities with others thruout the country.

A Group of Pamphlets on War Memorials

mmunity Buildings as Soldiers' Memorials.

s interesting 12-page pamphlet, prepared by Henry E. kson, U. S. Bureau of Education, gives a hearty en- sement to the idea of erecting useful community ldings rather than stone shafts as memorials to the oic soldiers of the Great War. The booklet contains ny valuable, practical suggestions, such as the financing the building by contributions of Liberty Bonds of the h issue, the enlarging or remodeling of a school house use as a community building, and an outlined plan for interior of such a combination school and community lding. A foreword by P. P. Claxton, U. S. Commis- ner of Education, endorses the schoolhouse as the ical memorial community building. (Write to Depart- nt of the Interior, Bureau of Education, Washington, C., for Community Circular No. 2, January, 1919.)

ggestions for a Living Memorial.

compact little pamphlet of the above title is brimful of ggestions as to the proper equipment and treatment of "Liberty Building" which is to serve the double pur- e of a memorial and a community house. Included in booklet are suggestions for recreational, civic, com- nity art and educational activities, as well as sugges- ns for financing the undertaking, architectural design, anization and management. Care is taken to differen- te between the community house problem of the small n and that of the large city. 16 pp. (Issued by War mp Community Service, 1 Madison Avenue, New York.)

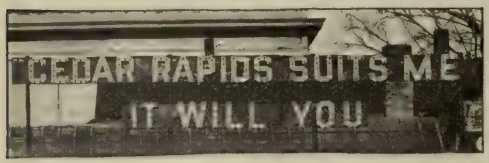
Forms of Memorials and Methods of Obtaining Designers.

A memorial that serves the triple purpose of honoring our noble fighters, gratifying our desire for beauty and satisfying some of the needs of the community is the type considered by the National Commission of Fine Arts to be the most appropriate and most rational. It is suggested that the memorial may take the form of a community building, a memorial bridge, a memorial fountain, a village green, a flag-staff with memorial base, a gateway, or some other building or object combining both beauty and utility. In any case, the first step, it is urged, is to seek the advice of some one trained in the arts and to confer with him in regard to the location of the memorial and its type, the selection of the artist and arrangements for competitions, if necessary. 4 pp. (Issued by the National Commission of Fine Arts, Washington, D. C.)

War Memorials—Suggestions for Their Treatment.

This 4-page publication of the American Federation of Arts, Washington, D. C., indicates the necessity of taking into careful consideration in the planning of memorials the following points: amount of money available, form of memorial, the site, the material, the approaches to the memorial, cost of laying out the site, legible lettering of inscriptions, simplicity, scale and proportion. It also urges that expert advice should be secured, preferably before the plans are made.

Advertise YOUR City

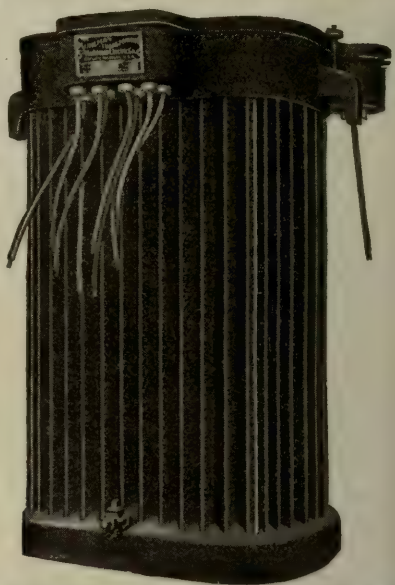


Federal Electric Sign

Your city has many advantages from a business as well as residential standpoint. No doubt, it has unusual facilities along certain lines, perhaps manufacturing, perhaps shipping, perhaps trading, etc. But—How many people know about it outside of your local residents? Advertise the fact. One of the best ways is to do as Cedar Rapids did, as shown above. They placed a big sparkling sign up near the railroad station. It sparkles by day and glistens by night. It costs very little to operate. It livens up the general appearance of the city—it seems to attract people like a magnet.—and you have 12 months to pay—you could not make a better improvement investment. Send us a sketch of what you would prefer as a sign. We will send complete information and prices without obligation to you. BOOST YOUR TOWN.

FEDERAL SIGN SYSTEM (ELECTRIC)
LAKE AND DESPLAINES STS. CHICAGO
Branches In All Large Cities

DISTRIBUTION TRANSFORMERS



FOR LIGHT AND POWER SERVIC
EFFICIENT LOW FIRST COST AN
MINIMUM UPKEEP

KUHLMAN ELECTRIC CO
BAY CITY, MICH.

Save Your Trees

It takes a lifetime to grow a fine shade tree. A colony of leaf-eating insects can destroy it in one season.

Tree Tanglefoot will effectually protect shade and fruit trees from most of our destructive insect pests, i. e.:

Canker worms **Tussock moths**
Climbing cut worms
Brown-tail moths **Woolly aphis**
Gypsy moths **Ants**

One application stays sticky three months and longer, outlasting ten to twenty times any other substance. Easily applied with a wooden paddle. One pound makes about ten lineal feet of band. It will not soften, run or melt, yet is always elastic, expanding with growth of tree. Effective rain or shine. Needs no mixing, used exactly as bought.

Endorsed by prominent Park and Cemetery Superintendents.



Trees on left were saved by Tree Tanglefoot

FOR TREE SURGERY

Superior to anything on the market. It is the best application after pruning or trimming. It will waterproof crotch, cavity or wound when nothing else will.

Sold generally by Seedsmen.

Price: 1 lb. cans, 50c; 3 lb. cans, $1.45; 10 lb. cans, $4.50; 20 lb. cans, $8.75; 25 lb. wooden pails, $10.50.

Write for free illustrated booklet on leaf-eating insects.

The O. & W. THUM COMPANY, 152 Straight Avenue, Grand Rapids, Mich.
Manufacturers of Tanglefoot Fly Paper and Tree Tanglefoot (122)

port on Grade Separation in Detroit.

e separation of street and railroad grades is an im-tant phase of city planning from the standpoint both of ety and of time- and money-saving thru interrupted fic. The Department of Public Works of Detroit, s its Division of Grade Separation, has been both thoro far-sighted in its study of this problem. In its latest ort on the subject, it presents the history of grade aration in Detroit up to July 1, 1918, and outlines the ıciples and methods that should control future working ıs. The very large amount of statistical information ompanying this report, with the numerous photographs, wings and attached maps, makes this discussion most plete and valuable. 62 pp.

wage Handling.

efficient handling of sewage by cities and towns is ered in a thoro manner in an interesting illustrated etin issued by Yeomans Brothers, 225 Institute Place, cago, Ill. A copy of this bulletin will be sent free on uest.

Municipal Markets of Long Beach, Cal.

This bulletin, prepared and issued by the Department of Public Affairs of Long Beach, Cal., sets forth how that city organized and has successfully operated a retail public market, and should prove helpful to other municipalities or organizations that are planning community markets. A description is included of an additional feature that is somewhat unique in the annals of public markets —the successful operation in Long Beach of a municipal fish market. 12 pp. (Write to Eugene E. Tincher, Commissioner of Public Affairs, Long Beach, Cal.)

Every City's Responsibility.

An 8-page pamphlet entitled "When They Come Home" emphasizes the responsibility of every community for providing intelligent protection from vice, and wholesome recreational features for its returning soldiers and sailors, who have been receiving such care while in service. (Sent free on request by the United States Public Health Service, Treasury Department, Washington, D. C.)

Methods · Materials · Appliances

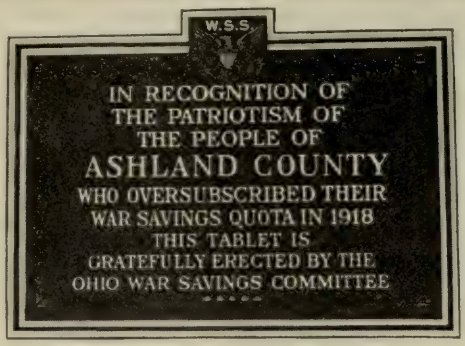
News for Boards of Public Works, Engineers, Contractors, Purchasing Agents and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Chlorine Control Apparatus for Water and Sewage Sterilization

The application of liquid chlorine has come to be considered the most effective means of water and sewage sterilization. It is, however, ordinarily fraught with difficulties arising from the activity of the gas. Wallace & Tiernan Company, Inc., 349 Broadway, New York City, invites the consideration of engineers and others interested in the purification of water and sewage, to its chlorine control apparatus, which has been designed to overcome these difficulties, and to its variety of types available for meeting varied needs and requirements. In the accompanying view is shown an installation of this apparatus by the Emergency Fleet Corporation at the sewage disposal works at Hog Island Shipyard, where it is said to be giving complete satisfaction.



SEWAGE STERILIZATION EQUIPMENT AT HOG ISLAND SHIPYARD



Put His War Record in Imperishable Bronze

You are proud of the part your son, husband or sweetheart took in the recent war—why not make that record a permanent one by putting it on an

IMPERIAL
Bronze Honor Roll

Municipalities, Counties, Business Institutions, Churches and Lodges should perpetuate the fame of their soldier boys. No other material is so well adapted to this patriotic display of your war heroes' record as solid cast bronze. Sketches furnished free. In writing, give size of Honor Roll or Tablet desired, together with names and wording desired.

Imperial Brass Mfg. Co.
1209 W. Harrison St. Chicago, Ill.

CLOW CHICAGO

CLOW



CLOW
CASTINGS

FOR
FILTRATION PLANTS
AND
WATER WORKS

We are equipped to give you the best of service on all specials made of cast iron

Quick Shipment of CAST IRON PIPE

can be insured by placing your orders now.

Manufactured by
James B. Clow & Sons
534-546 South Franklin Street
CHICAGO

Sales Offices
New York Milwaukee St. Louis
Philadelphia Minneapolis
Detroit San Francisco

CLOW CHICAGO

Durable Signs for Streets and Highways



A LEGIBLE STREET TRAFFIC SIGN

A durable sign is a good investment; this we have learned from the Egyptians: they carved their letters in stone, and to-day we can read their messages.

The Lyle Corrugated Culvert Company, Minneapolis, Minn., manufactures a road sign which is claimed to be not only easily read and attractive but durable—water-proof, bullet-proof and dust-proof. The letters are engraved in ⅛-inch galvanized plates of Armco iron,—a steel from which all impurities have been removed and which is noted for its rust-resisting properties. The company claims that this sign will not bend, break or rust. The letter-carving process thru which a Lyle sign must pass removes the galvanizing where the cutting tool passes; to insure permanence, therefore, the letters are treated with a specially made alloy of zinc and zinc chloride. The sign is then treated with two coats of Spar enamel, both of which are baked on, this enamel coating adding both beauty and permanence. Lastly, the sign is made thoroly legible by illuminating the letters by the application of pure flake aluminum.

✣ ✣

Specialist In Waste Disposal Opens New Offices

F. C. Bamman, formerly chief of the Garbage Utilization Division, United States Food Administration, announces that with the closing of this division he has been released by the Government, and has established offices in the Woodward Building, Washington, D. C., as a consulting engineer, specializing in the collection and disposal of garbage and other city wastes, and in the recovery of by-products from industrial wastes.

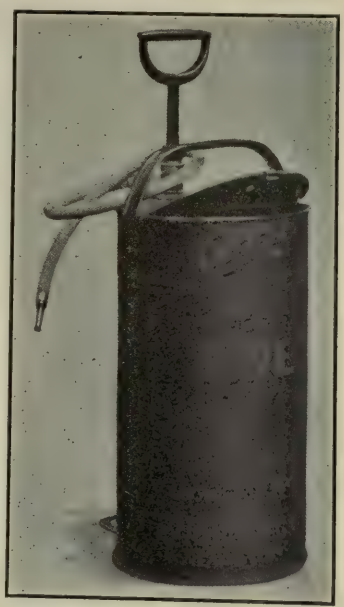
LIVE CHAMBER OF COMMERCE SECRETARY.

Civil Engineer by Profession, with several years of experience, a good organizer, now employed, wishes to make a change. Would accept position as City Manager. Nothing less than $3,000 considered. West or Middle West preferred.

Address, Box 66, care THE AMERICAN CITY.

Cross Fire Protection Products

The Cross Manufacturing Company, 149 Broadway, New York, has recently put on the market a splendid line of fire-extinguishing equipment, including the Fire Gun fluid extinguisher, the Pyrofite 2½-gallon soda and acid extinguisher, the Cross 5-gallon pump type non-freezing extinguisher, bucket tanks, Old Sol searchlights and a full line of fire equipment. Mr. C. J. Cross has also become New York manager for the C. C. C. Fire Hose Company, which will again bring him into fire department sales work.



FIVE-GALLON PUMP TYPE OF FIRE EXTINGUISHER

One of the 5-gallon Cross fire extinguishers is illustrated herewith. It throws a stream 40 feet, and is easily operated by a simple pump movement. A foot rest is provided to steady the tank while pumping. The pump is a double acting force pump made entirely of brass. The tank is strongly built of galvanized iron, painted inside with two coats of "Insulite," and on the outside with bright red enamel, with the lettering, "For Fire Only." This extinguisher is also furnished with 3 feet of ⅜-inch hose with brass fire nozzle, and with or without a non-freezing compound (which will not freeze at 20 degrees below zero).

✣ ✣

Park and Golf Course Sprinklers

The Buckner sprinklers for parks, golf courses, public and private grounds, etc., are "guaranteed to distribute more water, over a greater area, in less time, at less expense than any other sprinkler." W. A. Buckner, Fresno, Cal., claims to manufacture "a sprinkler for every use, a nozzle for every purpose."

The Buckner sprinklers include both rotary



Combination Railway and Lighting Poles
Installed on Hopple Street Viaduct
Cincinnati, Ohio

"ELRECO" Combination Railway and Lighting Poles do double duty—support trolley wires and ornamental lighting fixtures.

NO LAMP STANDARDS REQUIRED.

ELECTRIC RAILWAY EQUIPMENT COMPANY

New York CINCINNATI, OHIO 30 Church St.



SIGNS OF MERIT QUALITY AND PERMANENCE

No municipality, as well as no manufacturer, can consider that his patriotic duty is complete without giving employment to every returning soldier into civil life. It will be impossible for all to find a place in the shop, therefore it is up to the City Fathers to show due appreciation for the former defenders of true liberty.

You are called upon to improve your highways, streets and pavements. These will not be complete until the question of placing proper signs on them has been decided; and when considering highway and street signs it is for your interest to give first thought to attractiveness and permanency—in other words, don't do that which you will be required to do over again in a few years. All we ask of you is to request our catalog, showing combination street sign and lighting standards, traffic signs with electric light or without, highway and junction guide-boards, school, danger and railroad-crossing warning signs that are always efficient and a decided credit to any community.

THE LEBANON MACHINE CO

Highway Directory Engineers

LEBANON NEW HAMPSHIRE



and underground systems. The company has recently perfected its No. 3 sprinkler, which has adjustable nozzles so that the sprays may be made as fine or as coarse as desired. The accompanying illustration shows an adjustable nozzle throwing a spray 4 feet wide by 35-50 feet long, on 35 to 50 pounds pressure. The adjustable nozzle is also a feature of the Buckner underground head, which is installed flush



A BUCKNER LAWN SPRINKLER IN ACTION

with the soil,—an invisible system eliminating all labor in connection with lawn irrigation. Simply turn a valve and the work is done. Another distinctive feature of all Buckner sprinklers is their wearing qualities,—no metal-to-metal friction, therefore no leaks; no freaky cogs, delicate parts or water motors to burst the hose.

Army Camps and Municipalities Use Auto-Eductors

The experience of many cities has shown the mechanical apparatus for handling deposits in catch-basins to be far superior to the old-time hand labor, in cleanliness, economy, and ease and dispatch with which the work is accomplished. The Otterson Auto-Eductor Company, 817 Fairbanks Building, Springfield, Ohio, has recently made shipments of heavy-duty Auto-Eductors, mounted on Class B military chasses, to Camp Lee, Va., Camp Gordon, Ga., and Hawaiian Dept., Fort Mason, Cal., for shipment to Honolulu, for use in cleaning grit chambers, septic tanks and other heavy work needed in these camps; also to the Boro of Brooklyn, N. Y., one standard Auto-Eductor for cleaning catch-basins. (This last was driven overland from Springfield, Ohio, to its destination.) The Otterson Company has demonstrated that its Auto-Eductor will render efficient and economical execution in the cleaning of catch-basins. The machine can also be converted with little difficulty into an ordinary truck for handling stone, gravel and other material.

World War Honor Rolls

All cities, large and small, are just now interested in the erection of honor rolls for permanently recording the names of their heroic townsmen who served in the Great World War and for betokening the high esteem in which these men are held by their fellow-citizens. The Ashtabula Changeable Sign Co., Ashtabula, Ohio, has patented World War honor rolls and compendiums for both indoor and outdoor settings.

The accompanying illustration shows a double-faced honor roll which would make an attractive addition to a memorial park or green. The outstanding feature of the Ashtabula honor roll is the changeable method of placing names, so that the alphabetical arrangement can be maintained even tho only part of the names are procurable at one time.

The company has also designs of a World War compendium and trophy case for use in the lobby or on the wall of a memorial community house or other public building. The compendium is made single- or double-faced as desired, with or without a trophy case and cabinets for photographs, and in varying sizes to hold from 50 to 10,000



THE WAR HONOR ROLL AT BEVERLY

names. A compartment built in under the list of soldiers' names contains a loose leaf book for "Memoirs," giving data concerning each soldier and leading facts concerning the city's part in the Great War. The trophy case, when included, is large enough for a great many relics and is fastened at the top with a lock.

MEMORIALS
FOR OUR
SOLDIERS
IN SOLID BRONZE
HONOR ROLLS

FOR CITIES, COUNTIES, CHURCHES, LODGES AND BUSINESS ORGANIZATIONS.

Designs and estimates for Statuary, Bas-Relief, Modeling from Photographs.

State, Municipal and County Monuments in Granite and Bronze.

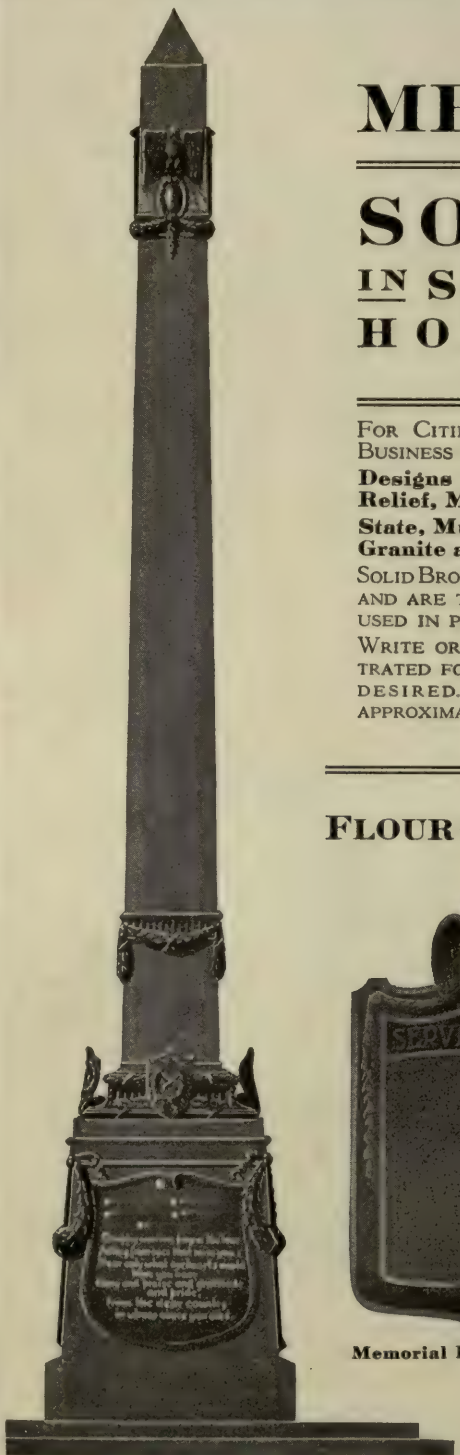
SOLID BRONZE AND GRANITE ARE IMPERISHABLE AND ARE THE ONLY MATERIALS THAT SHOULD BE USED IN PERMANENT MEMORIALS.

WRITE OR WIRE FOR FURTHER DETAILS AND ILLUSTRATED FOLDER. GIVE NATURE OF MEMORIAL DESIRED. WHERE TABLETS ARE WANTED GIVE APPROXIMATE NUMBER OF NAMES.

DEPARTMENT M.

FLOUR CITY ORNAMENTAL IRON CO.

MINNEAPOLIS, MINN.



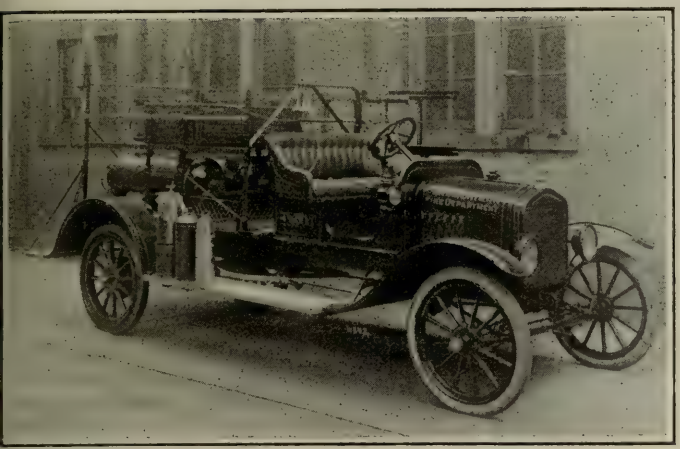
Municipal or County Monument.



Memorial Bronze Tablet.



Flag Pole Base with Bronze Tablet for Names.



A SMALL AND COMPACT FIRE FIGHTER

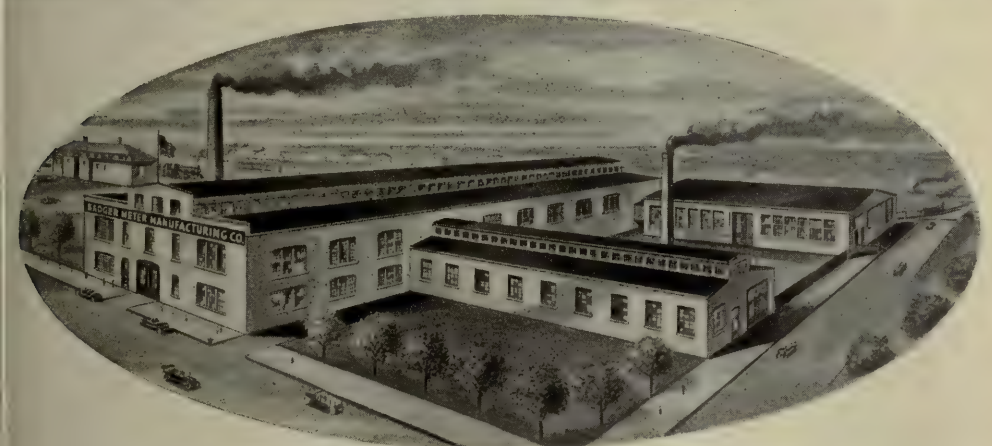
extinguishers, axe and crowbar. By combining the weapons used by the modern fire fighter with the dependability of the Ford, the American-LaFrance Company believes that it has produced the most powerful, economical and efficient machine on the market. This car is also extremely easy to operate; in fact, one of the claims to merit is that one man can get this fire apparatus into immediate action. A wide field of usefulness is prophesied for this new addition to the American-LaFrance line.

An Effective and Inexpensive Fire Truck

The Ford 1-ton double-tank chemical car shown herewith is in itself almost a complete small-town fire department. This fire truck is one of the newest models of the Sundry Sales Department, American-LaFrance Fire Engine Company, Inc., Elmira, N. Y. The car is equipped with two 35-gallon chemical tanks, so piped that either tank can be discharged into the line of hose while the other tank is being charged. A shut-off nozzle gives the man at the end of the hose complete control of the chemical stream. The miscellaneous equipment includes two ladders, two lanterns, two hand

Badger Company Moves To Larger Quarters

The Badger Meter Manufacturing Company, Milwaukee, Wis., announces that since February 22 it has been located at 841-7 Thirtieth Street, in a new and enlarged plant, having 22,800 square feet of floor space. Water department officials will be interested in the catalog of the Badger Company, which includes various types of meters for many different uses. The steady growth in the demand for Badger meters from municipalities and water-works companies in all parts of the United States has necessitated the increase in manufacturing facilities.



THE NEW HOME OF THE BADGER METER MFG. CCMPANY

Pavements That Pay for Themselves.

Progressive communities that have exchanged the difficulties of hauling on earth roads for the comforts of travel over improved highways have found that the saving in operating expenses for only a brief period is sufficient to pay the full cost of the concrete paving. A four-page circular, issued by the Portland Cement Association, Chicago, Ill., contains photographs and statistics of comparison between earth and concrete roads in the number of miles per gallon of gasoline. This circular will be sent free on request.

Motor Trucks for Every Service.

A large and attractive catalog recently prepared by the Indiana Truck Corporation, Marion, Indiana, contains photographs of all shapes and sizes of trucks, for street flushing, hauling road material, etc.

Nursery Stock for Parks and Playgrounds.

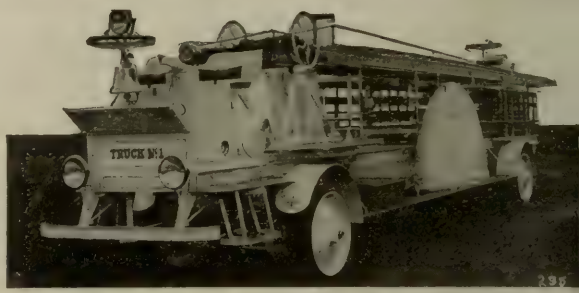
The 1919 catalog of the Elm City Nursery Company, New Haven, Conn., will interest all public officials, as well as private citizens, who wish to purchase trees, shrubs or plants for decorative purposes.

Four-Wheel Drive
Aerial Ladder Truck

Pneumatic Air Hoist
Automatic Ladder Lock

One man puts the ladders where you want them. No More Cranking.

Write for free booklet and list of users



COUPLE-GEAR FREIGHT-WHEEL CO., 525 Buchanan Ave., GRAND RAPIDS, MICH



HURRAH! THE WAR IS OVER
WILL WE GET THAT PLAYGROUND?

Now is the time to erect the playground which has been postponed. Every town should build at least one new playground this spring where the children can have an opportunity to develop their bodies, by playing safely and away from danger. This means that they will become healthier and happier children and will grow to be better citizens.

Are you helping your junior citizens? Playgrounds are a good investment.

Write today for interesting descriptive printed matter on how to equip a model and up-to-date playground.

HOWARD GEORGE PHILADELPHIA, PA.

APEX: The Apparatus that will never work loose.

ALL MUNICIPALITIES NEED PLAYGROUNDS



The Playground not only betters the physical and moral tone of a city, but it is a real live investment. It cuts the perpetual moving population to a minimum which saves your manufacturer and your merchant.

American Apparatus will produce results.

WRITE FOR OUR CATALOGUE TO-DAY

AMERICAN PLAYGROUND DEVICE CO., W. 25th St., Anderson, Ind.



Medart Playground Apparatus

is again offered to users of this equipment after having been virtually off of the market during the war.

The government required war munitions and as the FRED MEDART FACTORIES were well adaptable to this class of work, they were devoted almost exclusively to munitions production during the war.

Many new lessons were learned in quantity production and in working to exacting specifications under the most rigid supervision. The stimulus of these conditions cannot do other than make MEDART PLAYGROUND APPARATUS better than ever. Our factory facilities have been greatly increased with new buildings and added equipment and our sales, engineering and executive forces strengthened.

The first essential of Medart success, "Good Service" is now thoroughly re-established and we are ready and better fortified than ever to help solve any problem appertaining to PLAYGROUND EQUIPMENT.

Our catalog "W" is a recognized guide on playground equipment and it will be mailed free on request. It covers every form of apparatus that has been approved in actual practice. It has helped solve many of the problems confronting directors when planning new playgrounds. It thoroughly reflects our forty-three years' practical experience.

FRED MEDART MFG. CO. GYMNASIUM OUTFITTERS · ST. LOUIS ·

FRED MEDART MANUFACTURING CO.

Manufacturers of

PLAYGROUND APPARATUS, GYMNASIUM APPARATUS AND STEEL LOCKERS

Potomac and DeKalb Streets **ST. LOUIS, MO.**

For Chamber of Commerce Secretaries Civic Club Secretaries And Other Men in Public Life Who Wish Their Success to Grow

The American City Bureau Summer School in Community Leadership will be held this year at Eagles Mere Park, Pa., July 14th to 26th.

You can enlist the experience of the entire nation in solving your community problems by attending this School. The instructors are intimately in touch with the nation's thought along these lines and are themselves exerting a big influence in making it. They are essentially "doers"—not theorists. Each has a strong individual record of success behind him.

They are the men who have made the American City Bureau, first the dominant and finally the only organization of its kind in the world. The Bureau has brought over one hundred strong Chambers of Commerce to their present efficiency. Its work, and that of the organizing concerns now merged with it, has touched the lives of over 24,000,000 people. It has played an important part not only in Chamber of Commerce campaigns but in many other vital and sometimes epoch-making community movements—such as new-charter campaigns, raising of war funds, an agricultural development project covering six states, an investigation of community problems for a foreign government, and others.

The course will deal broadly with:

Administration policies and structural necessities of modern Chambers of Commerce.

Sociological problems.

Economics

Municipal improvements

Personal help for the Secretary.

Throughout the course the emphasis is laid on the human forces that underlie all community problems—and through which all results must be obtained.

The strongest supporters of the Summer School are its past students. We can send you copies of letters from some of them—also the names of a good many more from whom you could get first-hand impressions.

There is more about the School in a pamphlet which you can secure by mailing us the attached coupon. Won't you do this?

AMERICAN CITY BUREAU
Tribune Building, New York

Date.....

GENTLEMEN:—

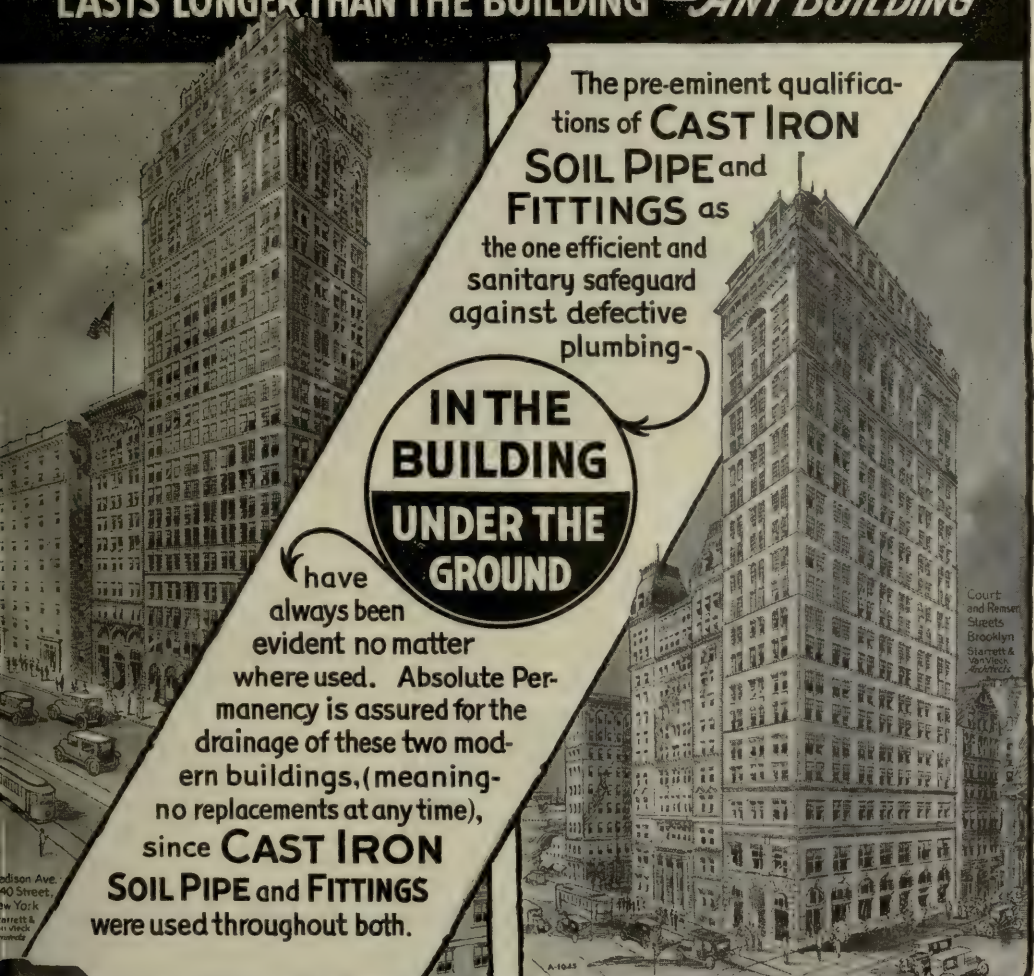
Send me your pamphlet regarding the Summer School in Community Leadership.

NAME.....

ADDRESS.....

CAST IRON SOIL PIPE

LASTS LONGER THAN THE BUILDING —ANY BUILDING



The pre-eminent qualifications of CAST IRON SOIL PIPE and FITTINGS as the one efficient and sanitary safeguard against defective plumbing—

IN THE BUILDING UNDER THE GROUND

have always been evident no matter where used. Absolute Permanency is assured for the drainage of these two modern buildings, (meaning no replacements at any time), since CAST IRON SOIL PIPE and FITTINGS were used throughout both.

Court and Remsen Streets Brooklyn Starrett & Van Vleck Architects

USE SOIL PIPE WHERE SOIL PIPE SHOULD BE USED

Specifications and illustrated literature will be mailed upon request by any or all of the following independent and competing makers of Cast Iron Soil Pipe and Fittings

American Foundry & Pipe Co. ..... Penne Sta., Pa.	Haines, Jones & Cadbury Co. ..... Philadelphia, Pa.	Somerville Iron Works ..... New York, N. Y.
Anniston Foundry Co. ..... Anniston, Ala.	Johnson Co., J. D. ..... New York, N. Y.	Standard Foundry Co. ..... Anniston, Ala.
Bessemer Soil Pipe Co. ..... Bessemer, Ala.	Krupp Foundry Co. ..... Lansdale, Pa.	Superior Manufacturing Co. ..... Bessemer, Ala.
Casey-Hedges Co., The ..... Chattanooga, Tenn.	Medina Foundry Co. ..... Medina, N. Y.	Union Foundry Co. ..... Anniston, Ala.
Central Foundry Co., The ..... New York, N. Y.	National Foundry Co. of New York, Inc. ..... Brooklyn, N. Y.	Weishittel & Son Co., A. ..... Baltimore, Md.
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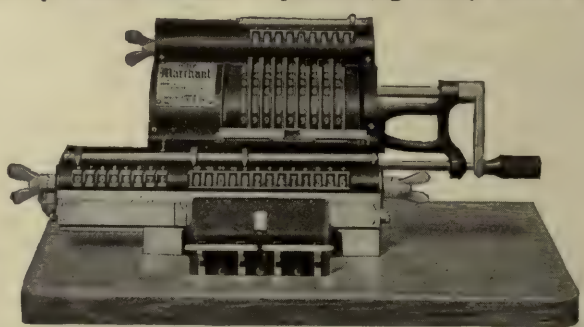
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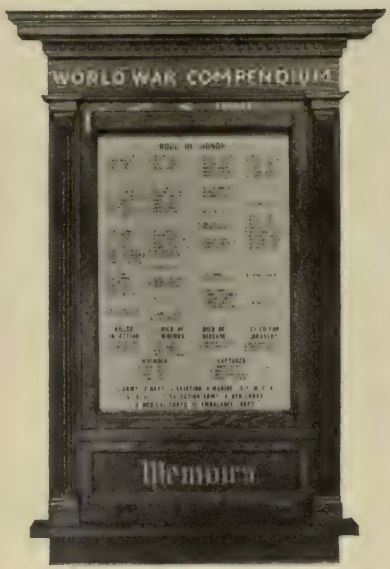
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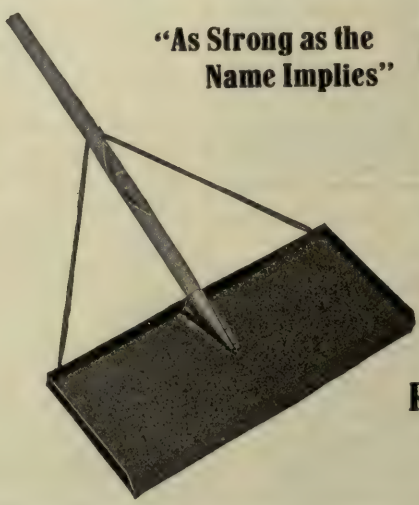
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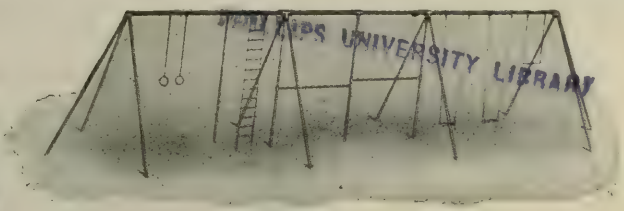
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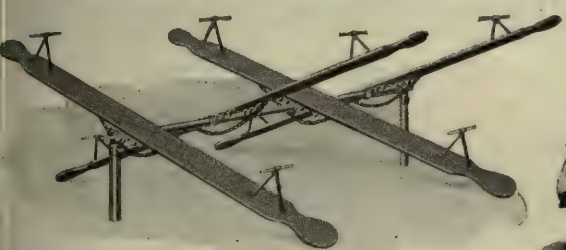
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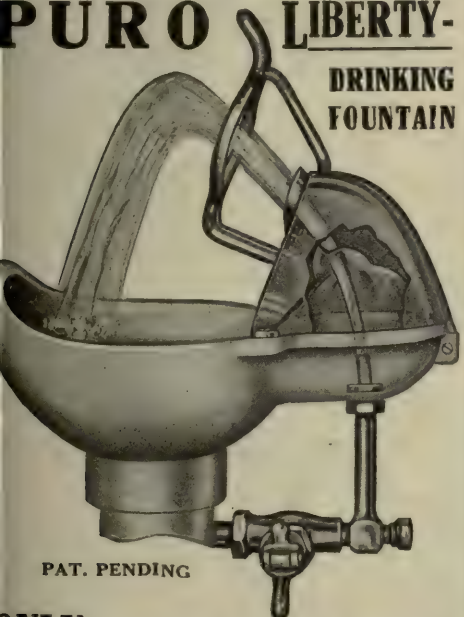
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Cemcoat has the combined virtues of enamel and paint.
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Particularly adapted for safety lines on pavements.

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DUSTOLINE FOR ROADS

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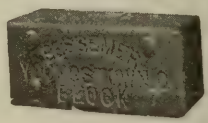
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The block that has helped make good brick pavements **famous.** Made from Shale **Naturally Adapted** to the manufacture of paving brick.

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THE METROPOLITAN PAVING BRICK CO.

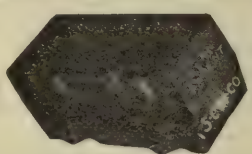
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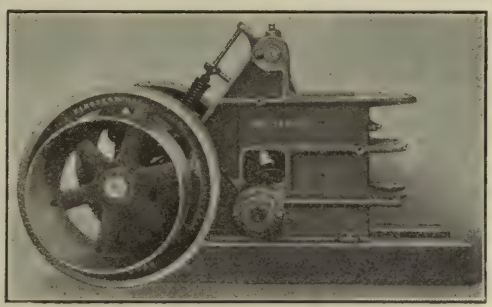
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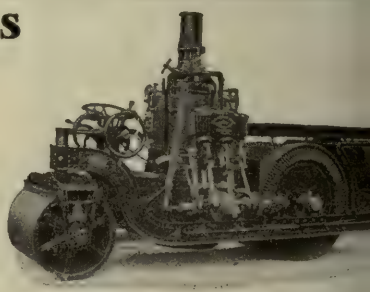
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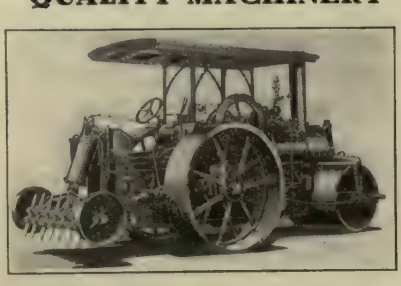
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Are purchased by Discriminating buyers due to the many years of satisfactory service which they will render, the low repair costs and their general reliability.

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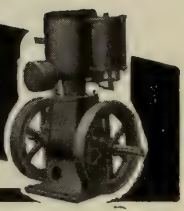
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A power unit compacted into least possible space. Light, and easy to mount and move. Fewest parts and lowest cost of fuel and upkeep. Four piston rings insure perfect compression. Water jacket completely envelope cylinder.

Being upright, the Northwestern delivers the largest possible percentage of rated power.

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Dyar Portable Sand, Stone and Gravel Heater

will heat and dry from 80 to 100 cubic yards in 9 hours, any of the above materials to any temperature from 225 to 350°—sufficient to lay 1,000 to 1,200 sq. yds. of 3″ rolled to 2″ bituminous top.

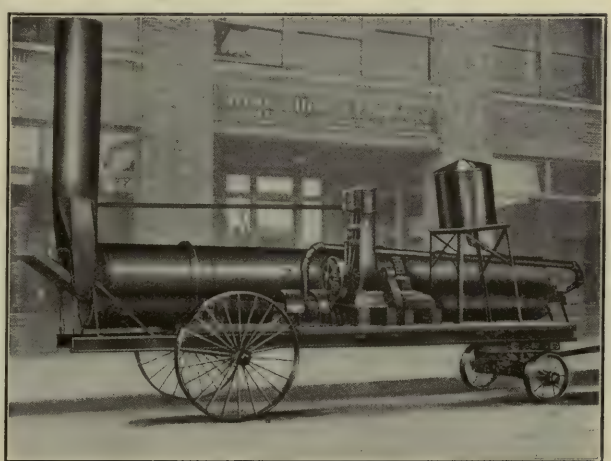
Heating furnace fed by either Fuel Oil or Kerosene.

Save money by building **PERMANENT ROADS OF BITUMINOUS CONCRETE** instead of everlastingly patching old roads, and throwing away money for maintenance.

A complete **DYAR PORTABLE ASPHALT PLANT** consists of two units—a heater and a mixer. A pair of horses will handle either unit.

Just sufficient bitumen when mixing to completely cover the aggregates; will insure a hard, smooth, permanent top, that will not bleed nor crawl as is usual in penetration work—a top which if put on a good foundation will improve under heavy traffic from year to year for many years.

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W. H. DANCE PATENT

The units sold separately if desired.

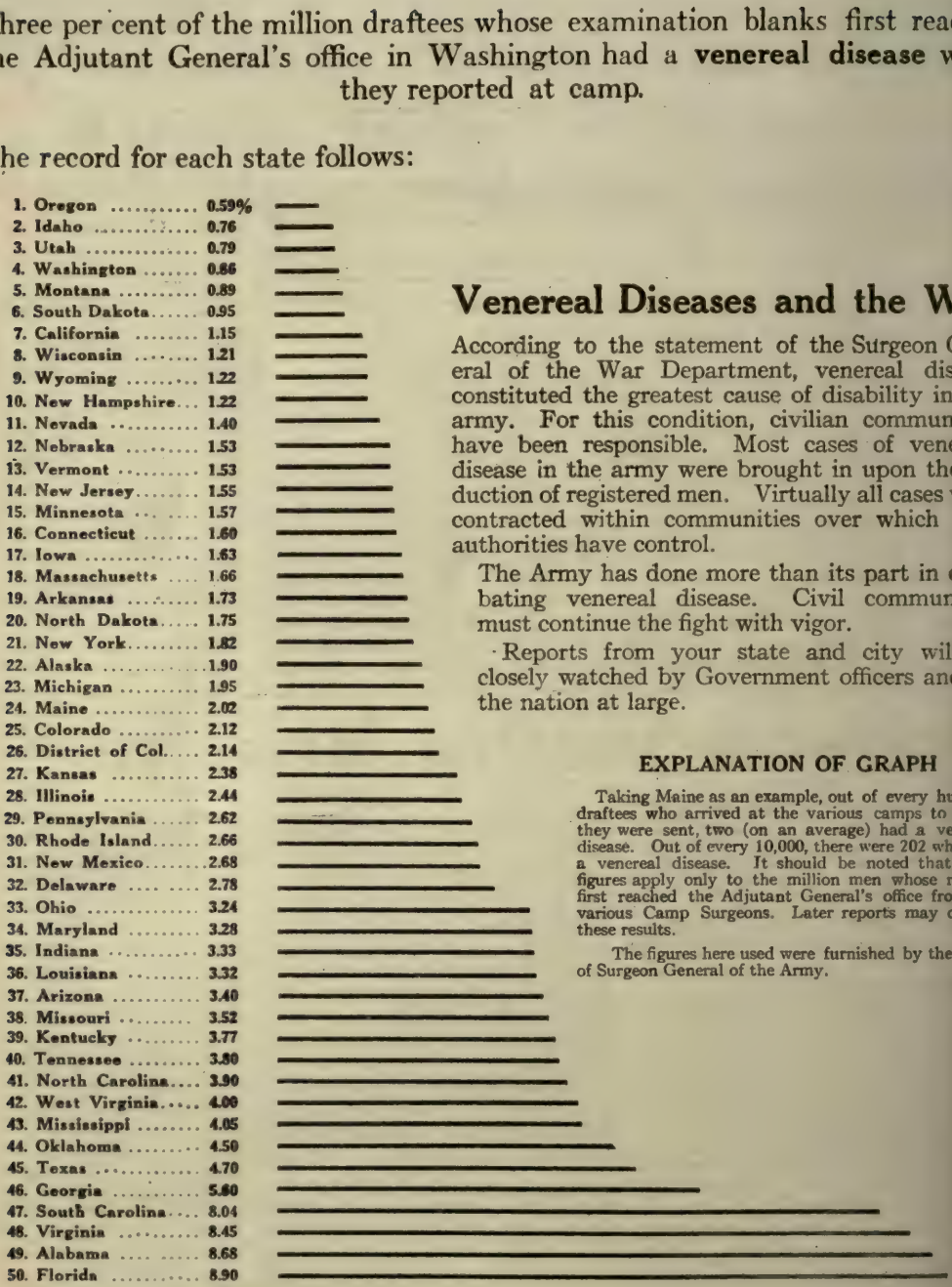
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ISSUED BY THE TREASURY DEPARTMENT
THE UNITED STATES PUBLIC HEALTH SERVICE
WASHINGTON, D. C.

V. D. N

Three per cent of the million draftees whose examination blanks first reac the Adjutant General's office in Washington had a **venereal disease** w they reported at camp.

The record for each state follows:



Venereal Diseases and the W

According to the statement of the Surgeon G eral of the War Department, venereal dise constituted the greatest cause of disability in army. For this condition, civilian communit have been responsible. Most cases of vener disease in the army were brought in upon the duction of registered men. Virtually all cases w contracted within communities over which c authorities have control.

The Army has done more than its part in co bating venereal disease. Civil communi must continue the fight with vigor.

Reports from your state and city will closely watched by Government officers and the nation at large.

EXPLANATION OF GRAPH

Taking Maine as an example, out of every hun draftees who arrived at the various camps to w they were sent, two (on an average) had a ven disease. Out of every 10,000, there were 202 who a venereal disease. It should be noted that t figures apply only to the million men whose re first reached the Adjutant General's office from various Camp Surgeons. Later reports may ch these results.

The figures here used were furnished by the of Surgeon General of the Army.

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Ornamental Trees, Shrubs, and Hardy Perennials

A complete stock.
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Novelty offered now for first time.

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1919 Catalog now ready.

Before making purchases consult the Municipal Buyer's Guide

See Page 100

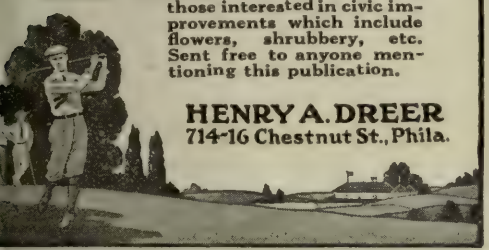
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We will show you how to save money get increased results.
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ually Convenient for Amusements, Shopping or Business.
Direct Entrance to B'way Subway and Hudson Tubes.
"The House of Taylor"
600 ROOMS
400 BATHS
Rates: From $2 Per Day
A SPECIALTY
155 PLEASANT ROOMS With Private Bath
$3 Per Day
The Martinique Restaurants Are Well Known for Good Food and Reasonable Prices.

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WORK IS ONE OF OUR SPECIALTIES

We were recently retained by a well known city to make a detailed appraisal and report on one of its utilities in connection with the city's proposed purchase of same.

Valuations of the Property as Appraised

By the City	$1,300,000
By an Engineer retained by the City	1,600,000
By the Utility Company	3,100,000
By an Engineer retained by the Utility Company	3,000,000
By an Engineer retained by the Utility Company	2,900,000
By Scofield Engineering Company, retained by City	**2,671,000**
THE VALUE OF PROPERTIES FIXED BY THE COURTS WAS	2,650,000

SCOFIELD ENGINEERING CO.

Consulting *Designing* *Supervising*

ENGINEERS

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We are Consulting Engineers for Municipalities.

We designed, built and operated the Cleveland Municipal plant. Its maximum rate is 3 cents per K. W. hour.

We represent cities in negotiations with the Utility Corporations.

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Just off Broadway at 109-113 West 45th St



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30 Theatres and a principal shops withi 3 to 5 minutes walk.

2 minutes of all sub ways, elevated roads surface cars and bu lines.

A Restaurant wher good food is served a moderate prices.

Room, adjoining bath - -	$1.50 u
Room, with private bath, -	$1.50 u
Sitting room, bedroom and bath,	$3.00 u

Apartments furnished, by the year, month or week, at special rates.

Write for "What's Going On in New York."

RAYMOND L. CARROLL, Pres. and Mgr.

REGISTERED
THE MARK OF QUALITY
ECONOMY
U. S. PAT. OFFICE
17 PROJECTS THE USER



Style No. 6, Size of Top as Ordered

Economy Drawing Table No. 6 makes work a pleasure and saves time because every adjustment is made quickly and easily from the drawing position. It also has ample drawer accommodations and a reference shelf under the top.



Style No. 3

To Buy Economy Tables means ECONOMY in the truest sense of the word.

Write for catalogue

Economy Drawing Table & Mfg. Company

Adrian **Michigan**

AUTOMATIC ADJUSTABLE
OVERHEAD **BUCKNER** UNDERGROUND
IRRIGATION SYSTEMS

EVERYTHING NEW IN SPRINKLERS

FOR PARKS, GOLF COURSES, GARDENS, CEMETERIES, ORCHARDS, NURSERIES

THE BUCKNER PARK AND GOLF COURSE SPRINKLER

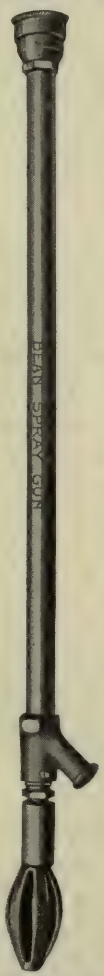
THE GREENSKEEPER'S DREAM COMES TRUE

FROM THE MANUFACTURER TO YOU

No sprinklers sold until samples have been tested and approved. Samples sent Golf Clubs and Parks on request. State pressure and size of hose.

W. A. BUCKNER, Manufacturer
1051 T Street, Fresno, Calif.

SPRAY GUN



SAVES ½ LABOR EXPENSE

Bean Spray Gun with one line of ⅝ inch hose on *biggest power sprayer* permits *one man* to do work of *two* using ordinary spray rods and nozzles. Think of time, money and labor saved.

Throws full fog to long distance spray and back to cut-off by turn of the wrist.

Operator can stand in one place and spray from bottom to top of trees or vice versa, by simply turning handle of gun.

Durable, efficient, easy to clean, and can be carried anywhere.

BEAN Spray Gun

Folder fully descriptive of features, sent upon request.

BEAN SPRAY PUMP CO.
20 Hosmer St., Lansing, Mich.

The Municipal Buyers' Guide

A classified reference index of advertisers in this issue of The American City

The alphabetical index of advertisers which follows this list (see page 110) will give you the page numbers of all advertisements, thus enabling you to secure the full address of the advertisers, as well as other information which may be of value.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 110

Aerial Ladder Trucks.
American-La France Fire Engine Co.
Couple-Gear Freight Wheel Co.

Air Compressors.
Allis Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Co.
Worthington Pump & Mach. Corp.

Air and Gas Washers.
Spray Engineering Co.

Ambulances.
Studebaker
White Co., The.

Arc Lamps.
General Electric Co.

Asbestos.
Carey Co., Philip.

Asphalt.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Carey Co., Philip.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Warren Bros. Co.

Asphalt Blocks.
Barber Asphalt Paving Co.

Asphalt Machinery.
Barber Asphalt Paving Co.
Connery & Co., Inc
Equitable Asphalt Maintenance Co.
Erie Machine Shops
Littleford Bros.
Texas Co.
Warren Bros. Co.

Automobile Fire Apparatus.
American-La France Fire Engine Co.
Anderson Coupling & Fire Supply Co.
Autocar Co., The
Couple-Gear Freight Wheel Co.
Federal Motor Truck Co.
General Motors Truck Co.
Studebaker
White Co., The

Automobile Lubricants.
Dixon Crucible Co., Joseph

Belt Dressing.
Dixon Crucible Co., Joseph

Blue Print Paper and Machines.
Kolesch & Co.

Braces, Extension.
Bond & Co., Harold L.

Brass Goods.
Anderson Coupling & Fire Supply Co.
Clark Co., H. W.
Flour City Ornamental Iron Co.
Smith Co., A. P.
Union Water Meter Co.

Brick, For Paving.
Dee Co., Wm. E.
Metropolitan Paving Brick Co
Southern Clay Mfg. Co.

Buildings (Steel Office & Mill)
Pittsburgh-Des Moines Steel Co.

Busses, Motor.
Studebaker
White Co., The.

Calculating Machines.
Marchant Calculating Machine Co.

Campaigns for Commercial Organizations.
American City Bureau.

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Buffalo Municipal Equipment Co.
Newport Culvert Co.
Rochester Can Co.

Cast Iron Pipe.
American Cast Iron Pipe Co.
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Clow & Sons, J. B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry Co.
Lynchburg Foundry Co.
Massillon Iron and Steel Co.
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Wood & Co., R. D.
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Otterson Auto-Eductor Co.

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Smith Co., A. P.

Caulking Materials.
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Portland Cement Assn.

Cement Inspection.
Allentown Testing Laboratories.

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Centrifugal Pumps.
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Bean Spray Pump Co.
Fairbanks, Morse & Co.
Worthington Pump & Mach. Corp.
Yeomans Bros. Co.

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Columbian Iron Works.

Chemical Analysis.
Allentown Testing Laboratories.

Chemical Engines.
American-La France Fire Eng. Co.
Anderson Coupling & Fire Supply Co.

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Arnold, Hoffman & Co.
Bush-Beach & Gent.
Great Western Electro Chem. Co.
Hooker Electrochemical Co.
Pennsylvania Salt Mfg. Co.
Wallace & Tiernan Co., Inc.

Chlorine, Liquid.
See Liquid Chlorine.

Coal Tar.
Barrett Co., The
Carey Co., Philip.

Cold Storage and Refrigeration Systems.
Spray Engineering Co.

Concrete Mixers.
Jaeger Machine Co.
Northwestern Steel & Iron Works.
Worthington Pump & Mach. Corp.

Concrete Pipe Form.
Northwestern Steel & Iron Works.

Conduit Rods.
Bond & Co., Harold L.
Turbine Sewer Machine Co.

Conduits.
Fibre Conduit Co.

Contractors' Equipment.
Austin-Western Road Machy. Co.
Autocar Co., The
Baker Mfg. Co.
Barber Asphalt Paving Co.
Bond Co., Harold L.
Connery & Co., Inc.
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General Motors Truck Co.
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Haiss Wagon Loader Co.
Lyle Corrugated Culvert Co.
Littleford Bros.
Northwestern Steel & Iron Works.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Universal Road Machinery Co.

Contractors for Water Main Cleaning.
National Water Main Cleaning Co.

Controllers, Rate.
Simplex Valve & Meter Co.

Creosoted Wood Block Pavements.
Barber Asphalt Paving Co.
Republic Creosoting Co.

Culverts.
American Cast Iron Pipe Co.
Dee, Wm. E., Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Northwestern Steel & Iron Works.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

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Clark Co., H. W.

Disinfecting Chemicals.
Electro Bleaching Gas Co.

Drawing Instruments and Supplies.
Economy Drawing Table & Mfg. Co.
Kolesch & Co.

Dump Carts and Wagons.
Austin-Western Road Machy. Co.
General Motors Truck Co.
Holzbog & Bro., Geo. H.
Studebaker
Watson Wagon Co.

Continued on page 102

MILLER SIPHONS
end sewerage worries

Put a **Miller Siphon** in the sewer that is likely to become stopped up. Install it, then forget it—it works automatically. It will flush the sewer clean and at regular intervals. A **Miller Siphon** isn't an experiment—it has been "doing duty" for twenty-five years.

Write for catalog and complete information about the following Pacific Flush Tank Co. appliances:

Miller Sewerage Siphons
Imhoff Tanks
Miller Flush Tank Siphons
Miller Water Regulators
P. F. T. Sewage Ejectors
Jointite

Pacific Flush Tank Company

4241-3 E. Ravenswood Ave. CHICAGO
Singer Building NEW YORK

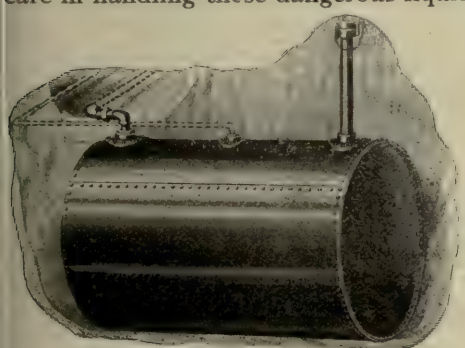
IT'S ALL IN THE TANK

Fire Prevention is of first importance in considering gasoline and oil storage. Store gasoline and other explosive liquids in underground

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in evaporation, leak and fire-proof tanks.

It is pumped out only as needed. With any less efficient storage equipment there is a constant fire risk, even though employees may use the greatest possible care in handling these dangerous liquids.



Bowser Underground Storage Tank.

Then there is the convenience, real attractiveness and general satisfaction derived from the use of

BOWSER EQUIPMENT.

Let us tell you how your city can decrease fire hazards.

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HAVANA
Lonja del Comercio 427
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6 Castlereagh St.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 110

Dust Laying Compounds.
Barrett Co., The.
Dustoline for Roads Co.
Semet-Solvay Co.
Standard Oil Co. of Indiana
Standard Oil Co. of N. J.

Electric Current Meters.
General Electric Co.

Electric Generators and Motors.
Allis-Chalmers Mfg. Co.
Fairbanks, Morse Co.
General Electric Co.

Electric Lamps.
Cutter Co., George
General Electric Co.

Electric Lighting Plant.
Fairbanks, Morse & Co.

Electrical Supplies.
General Electric Co.

Electric Transformers.
Kuhlman Electric Co.

Enameled Iron Signs.
Baltimore Enamel & Novelty Co.

Engineers' and Surveyors' Instruments.
Buff & Buff Mfg. Co.
Kolesch & Co.

Engineers, Consulting.
Albright & Mebus.
Allentown Testing Laboratory
Allis-Chalmers Mfg. Co.
Alvord, John W., & Brudick, Chas.
Ballard & Co., F. W.
Black & Veatch.
Blanchard, A. H.
Burns & McDonnell.
Caird, James M.
Chester & Fleming.
Cravath, J. R.
Dunham-Clarin Co.
Flood, Walter H.
Fuller & McClintock.
Gage, Benj. E.
Gannett, Seelye & Fleming.
Greeley, Samuel A.
Hansen, A. E.
Harding, James.
Hazen, Whipple & Fuller.
Hering, Rudolph.
Higgins, J. Wallace.
Hopkins, Charles C.
Kesner, Myron A.
Knowles, Morris.
Ludlow, J. L.
MacKrell, Edwin A.
Mitchell, Hugh C.
Pollock & Taber
Potter, Alexander.
Potts, Clyde.
Scofield Engineering Co.
Stillman & Van Siclen
Taylor, Henry W.
Waddell & Son

Engine, Gas. (See Gas Engines.)

Exhibition Material
Educational Exhibition Co.

Expansion Joint Material.
Barber Asphalt Paving Co.
Barrett Co., The.
Carey Co., Philip.
Robertson Co., H. H.
Tuscon Steel Co.

Fencing.
Enterprise Iron Works.
Flour City Ornamental Iron Co.
Stewart Iron Works Co.

Fertilizers.
Dreer, Henry A.

Filing Cabinets.
Economy Drawing Table & Mfg. Co.

Filters-Feed Water.
Pittsburgh Filter Mfg. Co.

Filtration Plants.
N. Y. Continental-Jewell Filtra. Co.
Norwood Engineering Co.
Pittsburgh Filter Mfg. Co.

Fire Alarm Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Fire Alarm Signal, Electric.
Federal Sign System.

Fire Alarm Signals, Steam.
Union Water Meter Co.

Fire Alarm Systems.
Gamewell Fire Alarm Telegraph Co.

Fire Department Apparatus.
American-LaFrance Fire Engine Co.
Autocar Co., The
Couple-Gear Freight Wheel Co.
Federal Motor Truck Co.
General Motors Truck Co.
Studebaker.
White Co., The.

Fire Department Supplies.
American La France Fire Engine Co.
Anderson Coupling & Fire Sup. Co.

Fire Escapes.
Flour City Ornamental Iron Co.

Fire Extinguishers, Chemical.
American-LaFrance Fire Engine Co.
Anderson Coupling & Fire Sup. Co.

Fire Hose.
Anderson Coupling & Fire Sup. Co.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Rubber Co., B. F.

Fire Pumps.
Fairbanks, Morse & Co.
Worthington Pump and Machinery Corporation.

Flag Poles.
Flour City Ornamental Iron Co.

Flexible Joints.
U. S. Cast Iron Pipe & Fdry. Co.

Fountains.
Flour City Ornamental Iron Co.
Imperial Brass Mfg. Co.
Puro Sanitary Drinking Foun. Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Furnaces, Melting.
Leadite Co.

Garbage Cans—See Cans for Ashes and Garbage.

Garbage Wagons.
Austin-Western Road Machy. Co.
Autocar Co., The
Federal Motor Truck Co.
General Motors Truck Co.
Holzbog & Bro., Geo. H.
Studebaker.
Watson Wagon Co.
White Co., The.

Gas, Chlorine.
Electro Bleaching Gas Co.

Gas Engines.
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
Foos Gas Engine Co.
Worthington Pump & Mach. Corp.

Gaskets.
Leadite Co.

Gas Meters.
General Electric Co.
Pittsburgh Meter Co.

Gasoline Pumping Engines.
Bond Co., Harold L.
Fairbanks, Morse & Co.
Worthington Pump & Mach. Corp

Gasoline Storage Tanks.
Bowser & Co., Inc., S. F.

Gates For Parks and Cemeteries.
Enterprise Iron Works.
Stewart Iron Works Co.

Gauges, Loss of Head, Rate of Flow
Simplex Valve & Meter Co.

Gauges—Surface, Reservoir and Special Water Works.
Clark Co., H. W.
Simplex Valve & Meter Co.

Graders.
Austin-Western Road Machy. Co.
Lyle Corrugated Culvert Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Graphite.
Dixon Crucible Co., Joseph.

Grass Seed.
Burpee Co., W. Atlee.
Dreer, Henry A.
Thorburn & Co., J. M.

Health and Amusement Devices.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg. Co., Fred.

Heating Kettles.
Connery & Co., Inc.
Dyar Supply Co.
Littleford Bros.

High Pressure Hydrants.
Smith Co., A. P.

Hoists.
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.

Hose.
Anderson Coupling & Fire Sup. Co.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Rubber Co., B. F.

Hot Mixers.
Barber Asphalt Paving Co.

House Numbers.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co

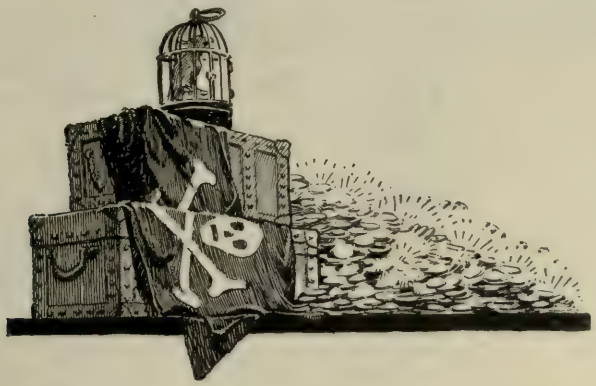
Hydrants.
Clow & Sons, James B.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Norwood Engineering Co.
Rensselaer Valve Co.
Smith Co., A. P.
Wood & Co., R. D.

Indicator Posts.
Columbian Iron Works.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.

Insulating Materials.
Barrett Co., The.
Carey Co., Philip.
General Electric Co.

Insulated Wire and Cable.
General Electric Co.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Continued on page 104



Teach's Treasure

That famous Buccaneer may have buried his dubloons and pieces of eight in the Asphalt Lake of Trinidad.

A greater treasure by far has come out of the Lake—good pavements. A treasure of infinitely more value than all the pirate's gold.

TRINIDAD LAKE ASPHALT

has been used to build good pavements since 1876. Discerning city engineers will accept no "substitute".

It is the nature-created properties of TRINIDAD that cannot be imitated by man, that are responsible for the long-life record of TRINIDAD pavements. There's another explanation—

Ask for "It is Different".

The Barber Asphalt Paving Company

Philadelphia, Pa.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 110

Jail Cells and Jail Work.
Stewart Iron Works Co.
Flour City Ornamental Iron Co.

Joints, Flexible.
Coldwell-Wilcox Co.

Kettles, Tar and Asphalt.
Connery & Co., Inc.

Landscape Architects.
Arnold, Sheffield A.
Arnold & Tripp.
Cole, Louis S.
Cullen, Wm. E.
Davey Tree Expert Co.
Helder, Arthur H.
Higgins, J. Wallace.

Lapidolith.
Sonneborn Sons, Inc., L.

Lavatory Specialties.
Imperial Brass Mfg. Co.

Lawn Mowers.
Austin Western Road Machy. Co.
Pennsylvania Lawn Mower Works.
Shawnee Mower Co.

Lawn Sweepers.
Everwear Mfg. Co.
Pennsylvania Lawn Mower Co.

Lead Furnaces & Caulking Tools.
Smith, A. P.

Leadite.
Leadite Co.

Lead Wool.
United Lead Co.

Leak Finders.
Clark & Co., H. W.
Pitometer Co.

Lighting Standards.
Cutter Co., George.
Electric Railway Equipment Co.
Stewart Iron Works Co.

Liquid Chlorine.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Electro Bleaching Gas Co.
Great Western Electro Chem. Co.
Hooker Electrochemical Co.
Pennsylvania Salt Mfg. Co.
Wallace & Tiernan Co., Inc.

Lubricants.
Dixon Crucible Co., Joseph.

Memorials for Soldiers, Etc.
Ashtabula Changeable Sign Co.
Flour City Ornamental Iron Co.
Imperial Brass Co.
Lebanon Machine Co.

Manhole Covers.
Clark Co., H. W.
Clow & Sons, James B.
Columbian Iron Works.
Flour City Ornamental Iron Co.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Merry-Go-Rounds.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg., Co. Fred.

Metal Preservatives.
Dixon Crucible Co., Joseph

Meter Books.
Buffalo Meter Co.
Pittsburgh Meter Co.

Meter Boxes.
Buffalo Meter Co.
Clark Co., H. W.
Columbian Iron Works.
Ford Meter Box Co.
Hersey Mfg. Co.
McNutt Meter Box Co.
Pittsburgh Meter Co.

Meter Couplings.
Clark Co., H. W.
Ford Meter Box Co.
McNutt Meter Box Co.
Pittsburgh Meter Co.

Meter Holding Devices.
Ford Meter Box Co.
McNutt Meter Box Co.

Meter Testers.
Buffalo Meter Co.
Clark Co., H. W.
Ford Meter Box Co.
Neptune Meter Co.
Pittsburgh Meter Co.

Meters—See Water and Gas Meters.

Meters for Oil and Gasoline.
Bowser & Co., S. F.

Motor Trucks.
Autocar Co., The
Couple-Gear Freight Wheel Co.
Federal Motor Truck Co.
General Motors Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Motor Fire Apparatus—See Automobile Fire Apparatus.

Motor Truck Trailers.
Watson Wagon Co.

Natural Asphalt.
Barber Asphalt Paving Co.

Nurseries.
Andorra Nurseries.
Bobbink & Atkins.
Donaldson Co.
Dreer, Henry A.
Elm City Nursery Co.
Kohankie & Son, Henry.
Meehan Co., Thomas.
Riverview Nursery & Seed Co.
Smith Co., W. & T.
Storrs & Harrison Co.

Oil Engines.
Fairbanks, Morse & Co.

Oil Tanks.
Bowser & Co., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.

Ornamental Metal Fencing.
Flour City Ornamental Iron Co.

Packing.
Carey Co., Philip.

Paint, Preservative.
Barrett Co. The.
Dixon Crucible Co., Joseph.
Sonneborn Sons, Inc.

Paint Gun (Pneumatic).
Spray Engineering Co.

Park Benches.
American Playground Device Co.
Enterprise Iron Works.
Stewart Iron Works Co.

Park and Lawn Sprinklers.
Buckner, W. A.
Spray Engineering Co.

Paving Inspection.
Allentown Testing Laboratories.

Paving Machinery and Tools.
Barber Asphalt Paving Co.
Erie Machine Shops
Equitable Asphalt Maintenance C
Warren Bros. Co.

Paving Materials. (See also und
Brick and Cement.)
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Bitoslag Paving Co.
Carey Co., Philip
Robertson Co., H. H.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.
Warren Bros. Co.

Paving Mixers.
Barber Asphalt Paving Co.
Warren Bros. Co.
Worthington Pump and Machin
Corporation.

Paving Mixtures.
Barker Asphalt Paving Co.
Standard Oil Co. of Indiana,
Standard Oil Co. of N. J.

Pencils, Drafting, Office.
Dixon Crucible Co., Joseph.

Pipe.
American Cast Iron Pipe Co.
Cast Iron Pipe Pub. Bureau, R.
McWane, Sec.
Central Foundry Co.
Clow & Sons, James B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry Co
Lynchburg Foundry Co.
Massillon Iron & Steel Co.
Pacific Tank & Pipe Co.
U. S. Cast Iron Pipe & Foundry
Warren Fdry. & Machine Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A

Pipe Covering.
Carey & Co., Philip.

Pipe Cutters.
Smith Co., A. P.
Strickler & Bros., W. W.

Pipe Joint Compound.
Dixon Crucible Co., Joseph.
Pacific Flush Tank Co.

Pipe Jointing Materials.
Leadite Co.
United Lead Co.

Pipe Locators.
Clark Co., H. W.

Pipe (Riveted Steel.)
Pittsburgh-Des Moines Steel C

Pitch.
Barrett Co., The.
Carey Co., Philip.

Pitometers.
Pitometer Co., The.

Pito Tubes.
Simplex Valve & Meter Co.

Playground Apparatus.
American Playground Device C
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg. Co., Fred

Plows.
Austin Western Road Mach'y C
Burch Plow Works Co.

Plumbing Supplies.
Clow & Sons, James B.

Poles, Combination Railway Lighting.
Cutter Co., George.
Electric Railway Equipment C

Continued on page 106

Now That We Have Got The Kaiser Licked

Let's get down to hard pan in roads which are so much needed to take care of motor truck transportation.

Why? Some of the roads in this country look as if there had been a few shells landed here and torn them up.

ROADS? YES, AND GOOD ROADS,

were never more needed than they are today. It is safe to say motor truck transportation and operation expense would be reduced 75%, if the roads on which they travelled were surfaced with

WARRENITE



BOSTON POST ROAD
Warrenite Road, Fairfield Ave., Fairfield, Conn., laid over old macadam

Let us help you with our expert service in making up your plans for roads to be surfaced this year.

SURFACE YOUR ROADS WITH WARRENITE

The modern country-road surface. A most reliable American product.

Write today for Warrenite illustrated booklets, specifications and forms of mixture agreement available to all experienced contractors.

WARREN BROTHERS COMPANY

Executive Offices **BOSTON, MASS.**

DISTRICT OFFICES

NEW YORK, N. Y.
LOS ANGELES, CAL.
RICHMOND, VA.
TORONTO, ONT.
WINNIPEG, MAN.
CHICAGO, ILL.
PORTLAND, ORE.
NASHVILLE, TENN.
MONTREAL, P. Q.
SAN FRANCISCO, CAL.
PHOENIX, ARIZ.
ST. LOUIS, MO.
UTICA, N. Y.
VANCOUVER, B. C

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 110

Police Patrols.
The Autocar Co.
General Motors Truck Co.
White Co., The.

Police Signal Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Police Signal Systems.
Gamewell Fire Alarm Telegraph Co.

Portland Cement.
Pennsylvania Cement Co.

Publishers.
Engineering News-Record.

Pumping Machinery.
Allis-Chalmers Mfg. Co.
Bond Co., Harold L.
Bean Spray Pump Co.
Deming Co.
Fairbanks, Morse & Co.
Wood & Co., R. D.
Worthington Pump and Mach. Corp.
Yeomans Bros. Co.

Pumps for Oil and Gasolene.
Bowser & Co., S. F.

Ramshorn Meter Holding Frame.
Ford Meter Box Co.

Repair Lids for Service Boxes.
Clark Co., H. W.

Road and Street Machinery.
Austin-Western Road Machy. Co.
Baker Mfg. Co.
Barber Asphalt Paving Co.
Buffalo-Springfield Roller Co.
Connery & Co., Inc.
Dyar Supply Co.
Erie Machine Shops.
Good Roads Machinery Co.
Haiss Wagon Loader Co.
Littleford Bros.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Universal Road Machinery Co.
Warren Bros. Co.
White Co., The.

Road Binders.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Semet-Solvay Co
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.

Road Culverts.
Burch Plow Works Co.
Clow & Sons, James B.
Good Roads Machy. Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
U. S. Cast Iron Pipe & Fdry. Co.
Wood & Co., R. D.

Road Drag and Street Scrapers.
Austin-Western Road Machy. Co.
The Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Rochester Can Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Road Oil.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Dustoline for Roads Co.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.

Road Oilers.
The Autocar Co.
Austin-Western Road Machy. Co.
General Motors Truck Co.
Good Roads Machinery Co.
Studebaker.
Universal Road Machinery Co.
White Co., The.

Road Rollers.
Austin-Western Road Machy. Co.
Barber Asphalt Paving Co.
Buffalo Springfield Roller Co.
Erie Machine Shops.
Good Roads Machinery Co.

Rock Crushers.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Universal Road Machinery Co.
Worthington Pump & Mach. Corp.

Roofing Materials.
Barber Asphalt Paving Co.
Barrett Co., The.
Carey Co., Philip.

Rubber Tires.—See Tires, Rubber.

Rust Preventing Material.
Barrett Co., The.
Dixon Crucible Co., Jos.

Sand Spreaders.
Buffalo Municipal Equipment Co.

Sand Testing Machines.
Kolesch & Co.

Sanitary Drinking Fountains.
Imperial Brass Mfg. Co.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Scales.
Fairbanks, Morse & Co.

Scarifiers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Universal Road Machy. Co.

Seeds, Plants and Bulbs.
Burpee Co., W. Atlee.
Dreer, Henry A.
Storrs & Harrison Co.
Thorburn & Co., J. M.

Service Boxes.
Clark Co., H. W.
Clow & Sons, James B.

Service Box Finders.
Clark Co., H. W.

Sewage Disinfection.
Electro Bleaching Gas Co.

Sewage Pumps and Ejectors.
Otterson Auto-Eductor Co.
Pacific Flush Tank Co.
Yeomans Bros. Co.

Sewer Buckets.
Champion Potato Machinery Co.

Sewer Castings.
Clark Co., H. W.
Dee Co., Wm. E.
Enterprise Iron Works.
Pacific Flush Tank Co.

Sewer Cleaning Apparatus.
Buffalo Municipal Equipment Co.
Champion Potato Machinery Co.
Pacific Flush Tank Co.
Turbine Sewer Machine Co.

Sewer Pipe.
Dee Co., Wm. E.

Sewer Rods.
Bond Co., Harold L.
Champion Potato Machinery Co.
Turbine Sewer Machine Co.

Sheer Gates.
Chapman Valve Mfg. Co.
Columbian Iron Works.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Shower Baths.
Imperial Brass Mfg. Co.

Signs—Iron and Wire.
Buffalo Municipal Equipment Co
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Stewart Iron Works Co.
Union Iron Products Co.

Sleeves and Valves.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Sluice Gates and Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Rensselaer Valve Co.

Smoke Stacks.
Pittsburgh-Des Moines Steel Co.

Snow Cleaning Machinery.
Baker Mfg. Co.
Good Roads Machinery Co.
Newport Culvert Co.
Russell Grader Mfg. Co.

Soil Pipe (Cast Iron).
Abendroth Bros.
Alabama Pipe & Foundry Co.
American Enameling Mfg. Co.
American Foundry & Pipe Co.
Anniston Foundry Co.
Bessemer Soil Pipe Co.
Campbell Mfg. Co.
Central Foundry Co.
Charlotte Pipe and Foundry Co.
Coosa Pipe & Foundry Co.
Crown Pipe and Foundry Co.
Gadsden Pipe Co.
Haines, Jones & Cadbury Co.
Johnson Co., J. D.
Krupp Foundry Co.
Medina Foundry Co.
National Pipe & Fdry. Co.
Reading Foundry & Supply Co.
Salem Brass & Iron Mfg. Co.
Sanitary Co. of America.
Somerville Iron Works, The
Standard Foundry Co.
Superior Mfg. Co.
Union Foundry Co.
Weiskittel & Son Co., A.
Wetter Mfg. Co., H.

Spraying Machinery for Trees and Shrubs.
Bean Spray Pump Co.
Deming Co
Fairbanks, Morse & Co.

Spray Nozzles.
Bean Spray Pmup Co.
Spray Engineering Co.

Standpipes.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Fairbanks, Morse & Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.

Steel Form for Drainage Tile.
Northwestern Steel & Iron Work

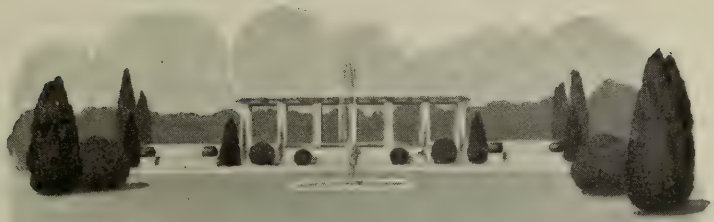
Steel Plate Work.
Pittsburgh-Des Moines Steel Co.

Stone Spreaders.
Austin Western Road Mach'y Co.
Burch Plow Works Co.

Street Cleaners Carts.
Studebaker.

Street Cleaning Machines (Motor Driven).
Elgin Sales Co.

Continued on page 108



PENNSYLVANIA

Quality

LAWN MOWERS

ACKNOWLEDGED leadership, backed by a nation-wide reputation for quality in manufacture helps you in the choice of a mower, as it carries with it the assurance of dependability.

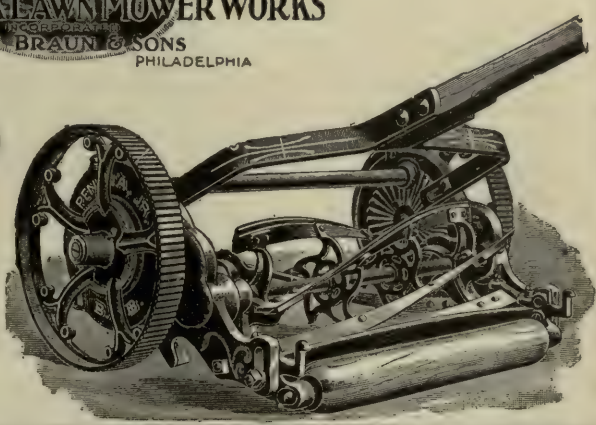
Because it is "work-hours" that you are buying, it can't be a mere question of first cost—if you are purchasing economically.

Sold by Hardware Dealers and Seedsmen

PENNSYLVANIA LAWN MOWER WORKS
INCORPORATED
JOHN BRAUN & SONS
FOUNDED 1877 PHILADELPHIA

This trade mark is on the handles of:

"Pennsylvania"
"Pennsylvania, Jr."
"Pennsylvania Golf"
"Pennsylvania Putting Greens Mower"
"Continental"
"Great American B. B."
"Shock Absorber"
"Quaker City"
"Red Cloud B. B."
"Orchid B. B."
"Daisy"
"New Belmont"
"Bellevue"
"Panama"
"Delta B. B."
"Electra"
"Pennsylvania Pony"
"Pennsylvania Horse"
"Pennsylvania Grand Horse"
"Pennsylvania Trio Horse" (86 in. cut)



Every name in this list is represented by an advertisement in this issue of THE AMERICA CITY. The alphabetical index to all advertisers follows this classified list. See page 11

Street Flushers.
Buffalo Municipal Equipment Co.
General Motors Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Lamps—Electric.
Cutter Co., George.
Flour City Ornamental Iron Co.
General Electric Co.

Street Lamp Posts.
Cutter Co., George.
Electric Railway Equipment Co.
Flour City Ornamental Iron Co.
Lyle Corrugated Culvert Co.
Stewart Iron Works Co.

Street and Road Graders.
Austin-Western Road Machy. Co
Good Roads Machinery Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.

Street and Road Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Union Iron Products Co.

Street Sign Posts.
Cutter Co., George.
Flour City Ornamental Iron Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.

Street Sprinklers.
Austin-Western Road Machy. Co.
Autocar Co., The
Buffalo Municipal Equipment Co.
Federal Motor Truck Co.
General Motors Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Sweepers.
Austin-Western Road Machy. Co.
Elgin Sales Co.
Studebaker.
Universal Road Machinery Co.

Street Trash Cans.
Rochester Can Co.
Steel Basket Co.

Surveyors Instruments.
Buff & Buff Co.
Kolesch & Co.

Tanglefoot for Trees.
Thum Co., O. & W.

Tanks, Storage for Oils and Gasoline, etc.
Atlantic Refining Co.
Bowser & Co., Inc., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc
Pittsburgh-Des Moines Steel Co.

Tanks and Towers.
Chicago Bridge and Iron Works.
Newport Culvert Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A.

Tapping Machines.
Smith Co., A. P.

Tar.
Barrett Co., The.

Tar & Asphalt Spreaders.
White Co., The.

Tar Kettles.
Barber Asphalt Paving Co.
Good Roads Machinery Co.
Connery & Co., Inc.
Littleford Bros.
Warren Bros. Co.

Tarvia.
Barrett Co., The.

Testing Laboratories.
Allentown Testing Laboratory Co.

Tires, Rubber.
Dayton Rubber Mfg. Co.
Firestone Tire & Rubber Co.
Goodrich Rubber Co., B. F.
Fisk Rubber Co.
U. S. Tire Co.

Traction Engines.
Buffalo Springfield Roller Co.

Traction Trains.
Buffalo Springfield Roller Co.

Tractors.
American-La France Fire Engine Co.
Fairbanks, Morse & Co.
General Motors Truck Co.
Watson Wagon Co.
White Co., The.

Traffic Posts.
Buffalo Municipal Equipment Co
Cutter Co., George.
Flour City Ornamental Iron Co.
Lebanon Machine Co
Lyle Corrugated Culvert Co.

Traffic Regulation Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.

Trailers.
Buffalo Springfield Roller Co.
Watson Wagon Co.

Trench Braces.
Bond Co., Harold L.
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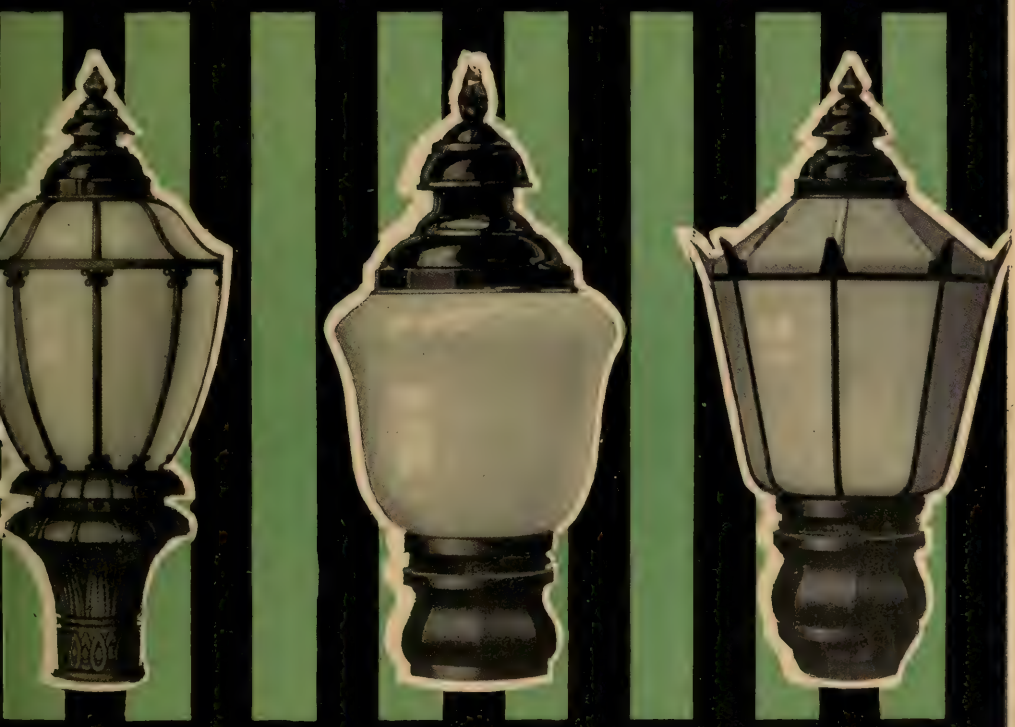
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Write us to-day, mentioning The American City, and we will send you our illustrated pamphlets, describing the most attractive and artistic street lighting standards and globes which have ever been offered to American municipalities.



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Do You Appreciate the Varied Applications of the Spraco Products?

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Every municipal department will find our illustrated catalog and literature of interest on account of the fact that there is hardly any variety of public work where the Spraco products are not efficient time and money savers.

It will cost you nothing to secure literature which may open up the way to some very important possibilities in connection with the more prompt and effective prosecution of your particular line of work.



The Spray Engineering Co.

ENGINEERS-MANUFACTURERS

93 Federal St. Boston, Mass.



TOWN AND COUNTY EDITION

April, 1919

Vol. XX No. 4

35 Cents $3 a Year

The American City

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We need good roads. MAKE THEM.

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Entered as second class matter, September 11, 1914, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Published monthly by The Civic Press, Tribune Building, New York.



Floodlighting Publi Buildings

Handsome public buildings are a source of civic pride to every com munity. Floodlighting is as im portant to a proper appreciation o the city's architecture as good stree lighting is to the comfort and safety of the citizens.

G-E Floodlighting Projector

for decorative lighting are simple to install and achieve results pleasing to the eye and adequate for the purpose. Floodlighting enhances the beauty of architecture and is an excellent medium for directing attention to the city's prominent buildings, monuments and parks.

Our specialists will be glad to make suggestions to any civic body or other interested organization.

General Electric Company

General Office Schenectady, N.Y.

35-21

CAST IRON PIPE

2-in. to 84-in. diameter

ALL TYPES:
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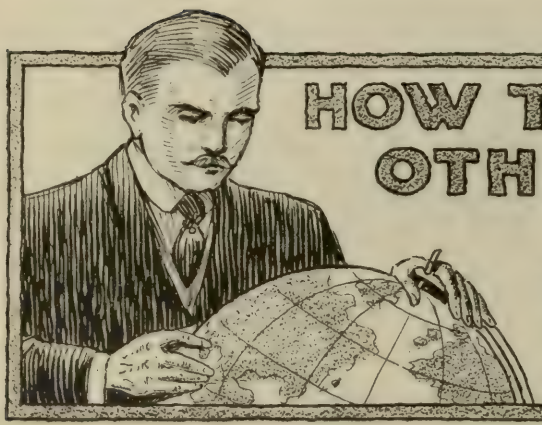
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Minneapolis, Plymouth Building



HOW THEY DO IT IN OTHER PLACES

THE AMERICAN CITY should be mentioned when writing for material. Officials who check over these items each month and write for such printed matter as interests them will find this a convenient way of keeping their information files up to date.

"The Streets That Texaco Built."

A circular of this title, issued by The Texas Company, Asphalt Sales Department, 17 Battery Place, New York, gives the names of 58 cities which are said to form only a partial list of the municipalities that have laid Texaco asphalt pavements with successful results. The circular also makes mention of the company's free service department, composed of experienced highway engineers, which is at the disposal of persons interested in highway construction.

Street Sprinklers and Flushers

are illustrated and described in the catalog of The Tiffin Wagon Company, Tiffin, Ohio, and the efficiency and economy of the flushing method of street cleaning are clearly shown.

Pipe Which Is Easy to Lay.

Booklet O, issued by The Central Foundry Company, 90 West Street, New York, illustrates and describes the special advantages of Universal Cast Iron water pipe, which can be easily laid, even by inexperienced men.

Rubbish Cans for Streets and Parks.

Galvanized iron cans designed for use on street corners, in parks, cemeteries and playgrounds, as receptacles for waste paper and rubbish; extra heavy cans for the collection of street sweepings; cans for home use for ashes or garbage; and also street scrapers and can carriers are described in an illustrated circular issued by the Rochester Can Company, 101 Hague Street, Rochester, N. Y.

Alpha Cement—How to Use It

is the title of a 96-page book issued by the Alpha Portland Cement Company, Easton, Pa. Not only does this book give minute and explicit directions concerning the use of cement in all kinds of concrete construction and in all kinds of weather, but it contains also a very large number of drawings and diagrams which serve to illustrate and explain each phase of the work.

Safe Storage of Oil and Gasoline.

Every municipal executive, fire chief or citizen concerned with the safe storage of inflammable liquids will be interested in the booklet of S. F. Bowser, Inc., Fort Wayne, Ind., relative to the company's system for storing oil and gasoline as safely as water.

Meter-Testing Machines.

Untested water meters mean an actual cash loss to the water department of any city. The Ford Meter Box Company, Wabash, Ind., will be pleased to send on request its new and attractive booklet describing the Ford meter-tesing machine, with illustrations, typical specifications, description of the most approved manner of testing meters for accuracy, and copies of letters from the water commissioners of a number of municipalities that have tested this tester and have found it satisfactory.

Road Fabric—Expansion Joints.

The Highway Materials Department of H. H. Robertson Company, First National Bank Bldg., Pittsburgh, Pa., is distributing on request free samples of the Robertson all-asphalt joint, which takes care of the expansion and contraction of brick, wood block or concrete roads and pavements. Illustrated literature relative to the use of these joints can also be secured, together with circular matter relative to Robertson Road Fabric, an electrically welded wire fabric for concrete road reinforcement.

Catch-Basin Cleaning Which Is Cleanly.

The old filthy ways of catch-basin cleaning have long a source of annoyance to many municipalities. The and up-to-date method of cleaning out sewer basins centrifugal pump mounted on an automobile chass illustrated and described in the printed matter issue The Otterson Auto-Eductor Company, 817 Fairl Building, Springfield, Ohio.

Tractors for Municipal and County Servic

The increasing use of tractors by municipalities and ties in various sorts of public work is attracting attention, and the catalog of the Advance-Rumely Thr Co., Inc., La Porte, Ind., will interest public officia private citizens who are studying the subject of eco cal hauling.

Steel Flag Poles.

The Walworth Mfg. Co., 801 East First Street, Bo Mass., will send on request its catalog containing de tions, illustrations and price-list of the Walworth flag poles, with patent ball-bearing revolving halyard These flag poles are said to be weather-proof and ning-proof. The catalog also includes price-list weather vanes and bunting flags.

Pipe and Tanks of Wood.

The Pacific Tank and Pipe Company, 310 Market S San Francisco, Cal., will send on request their illust catalog describing Pacific wood stave pipe and tank water-supply lines, sewerage systems, hydro-electric p etc. Municipal and water-works officials, engineers, who are interested to learn about the great econon wood pipe and its varied uses, will find this catal particular interest and value.

World War Honor Rolls.

The Ashtabula Changeable Sign Company, Ashta Ohio, will be pleased to send on request literatur garding its World War honor rolls and compendium both indoor and outdoor use. One of the company's m is a combination double-faced compendium and t case for use in the lobby of a "Liberty Building" or public building. Other models are designed with or out trophy case and cabinet for photographs, and i rious sizes for holding 50 to 10,000 names.

Imhoff Sewage Tanks.

Full particulars regarding the operation of Imhoff t designed for settling sewage and treating the sludge given in circular No. 7, issued by the Pacific Flush Company, Singer Building, New York.

Park Sprinklers.

Sprinklers for every conceivable use and service parks, golf courses, gardens, cemeteries, public and vate grounds, overhead and underground systems of gation, and fire protection—are described in the illust catalog and circular sent free on request by W. A. ner, 1051 T Street, Fresno, Cal.

Improved Play Ground Apparatus.

A catalog of equipment for playgrounds has been iished by the Hill Standard Company, 216 Fun-Ful Anderson, Ind., and will prove of value to all wh interested in the subject of public recreation.

(*Continued on page 6*)



esigned to Carry the Paying Loads t the Lowest Possible Cost

The Autocar motor is placed under the seat to shorten the wheelbase and distribute the load evenly over all four wheels.

This equalization of load diminishes wear and tear on tires and truck. It allows of lighter construction, so that less power is needed to move the weight of the truck and more is available to move the paying load. And the shorter wheelbase thus achieved gives the Autocar its extraordinary ease of handling.

The Town of Brookline Street Department finds the economy of operation of the Autocar and its ease of handling of great advantage in its work.

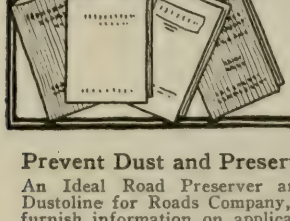
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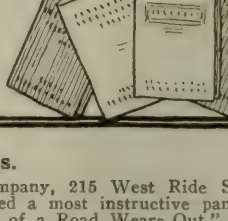
THE AUTOCAR COMPANY
Ardmore, Pa. **Established 1897**

Autocar

HOW THEY DO IT IN OTHER PLACE



Valuable illustrated material as mentioned below, will be sent free of charge if you mention THE AMERICAN CITY



Prevent Dust and Preserve Your Roads.

An Ideal Road Preserver and Dust Preventive. The Dustoline for Roads Company, Summit, N. J., will gladly furnish information on application relative to the use of its stainless and colorless dust preventive, which can be used on various types of pavements.

Equipment for Motor Fire Apparatus.

Municipalities which have a motor truck or chassis which they wish to turn into a piece of effective fire apparatus will be interested in the catalog issued by the Anderson Coupling & Fire Supply Company, Kansas City, Kans. This company specializes in fire apparatus equipment suitable for installation on automobile chasses. The catalog also covers general fire department supplies.

Steel Forms for Sewers, Culverts, Etc.

are described in Bulletin 49 issued by the Northwestern Steel & Iron Works, Eau Claire, Wis. These steel forms are recognized as standards for concrete construction work by engineers and contractors in all parts of the country.

Water Proofing.

Perhaps your problems in the water-proofing line will be quickly and permanently solved by Bulletins 11 and 12, issued by the Minwax Company, Inc., 18 East Forty-first Street. This company specializes on water proofing of a permanent quality for cement and wood floors, walls, swimming pools, bridges, subways, reservoirs, etc.

Castings for Water and Sewage Disposal.

James B. Clow & Son, 534-536 Franklin Street, Chicago, Ill., specialize in castings in all sizes for all requirements in connection with water and gas works, sewage and filtration plants. Their catalog will be sent on request.

Traffic News.

The above is the title of an interesting monthly publication issued by the Federal Motor Truck Company, of Detroit, Mich., which illustrates and describes the various uses of motor trucks, including much valuable material in regard to the uses which municipalities and counties are making of motor trucks in reducing the cost of their hauling work. Anyone interested in motor truck operation can secure *Traffic News* regularly by sending his address to the Federal Company.

A Good Roads Magazine Free.

The Atlantic Refining Company, Philadelphia, Pa., is issuing monthly a new publication called *The Atlantic Highway Digest*, which will be sent free of charge to anyone interested in the construction and maintenance of good roads.

Street Signs Which Do Not Mislead.

If your streets and roads are not properly marked with direction signs, any people who visit your municipality will be misled in a way which will not add to the reputation of your town. The Mathews Interlocking Sign Co., of White Plains, N. Y., will send on request illustrated printed matter relative to various types of street signs and traffic signs suitable for municipal and county service.

A Durable Pavement for Roads and Streets.

In the road-building program of to-day it is evident that it is essential to have a wearing surface which will stand the wear and tear of heavy motor truck traffic. In an illustrated circular entitled "Bitoslag: The Pavement That Wears Like Iron," the Bitoslag Paving Company, 90 West Street, New York, describes its improved asphaltic concrete pavement, which is said to have withstood successfully the heaviest traffic on many busy country roads and city streets.

Do You Care to Save Your Trees?

One of the most effectual means of protecting your shade and fruit trees from the most destructive insect pests is explained in the illustrated booklet on "Leaf-Eating Insects," sent free on request by The O. & W. Thum Company, 158 Straight Avenue, Grand Rapids, Mich.

Help for Worn Roads.

The Jaeger Machine Company, 215 West Ride S Columbus, Ohio, has issued a most instructive par entitled "When the 'Seat' of a Road Wears Out." valuable booklet describes in detail the newest and methods of repairing roads by the use of bituminou crete made by the cold mixing process.

Road Machinery and Culvert Pipe.

The F. B. Zieg Mfg. Co., Fredericktown, Ohio, ma tures a most complete and highly perfected line of machinery, and will send on request its catalog en "The Panama Line for Building and Maintaining Roads," containing illustrations and descriptions varied assortment of road machines, graders, drags vert pipe, unloaders, etc., for all types of road work.

Second-Hand Machinery at Reasonable Pr

Walter A. Zelnicker Supply Company, St. Louis, Mo. send free on request a monthly bulletin describing sel second-hand goods at bargain prices, which include kinds of machinery and supplies suitable for mun and county work.

A Complete Nursery Stock.

The Storrs & Harrison Co., of Painesville, Ohi issuing two catalogs this spring: Catalog No. 1, pages, describing a full line of fruit and ornamental shrubs, roses, hardy plants and bulbs, and profusely trated yith attractive half-tone prints of desirable mens, and Catalog No. 2, 176 pages, describing the pany's complete stock of vegetables and flower seed well as its general stock of trees, shrubs and plants.

Don't Let Your Pavements Crack or Buc

The use of an expansion joint eliminates buckling an pansion cracks in concrete, brick, wood block and gr pavements. If you are considering any street, hig or sidewalk construction work, The Philip Carey pany, 8 Wayne Avenue, Lockland, Cincinnati, Ohio, be pleased to send you its illustrated circular setting the good points of the Carey Elastite expansion joint showing method of installation.

Hydrants and Valves—500 Types and Size

The Kennedy Valve Mfg. Co., Elmira, N. Y., issu catalogue illustrating and describing valves, hydrants water gates made in so many types and sizes that e condition of service is provided for.

Sprinklers for Parks and Lawns.

The Boston Giant park sprinkler, the Young Fountai lawns and the Jack-in-the-Box sprinkler, with undergr piping for irrigating lawns and large estates, are trated and described in a circular entitled "Irrigation," cently issued by The Spray Engineering Company, Federal Street, Boston, Mass.

Pumping Machinery for Water-Works, et

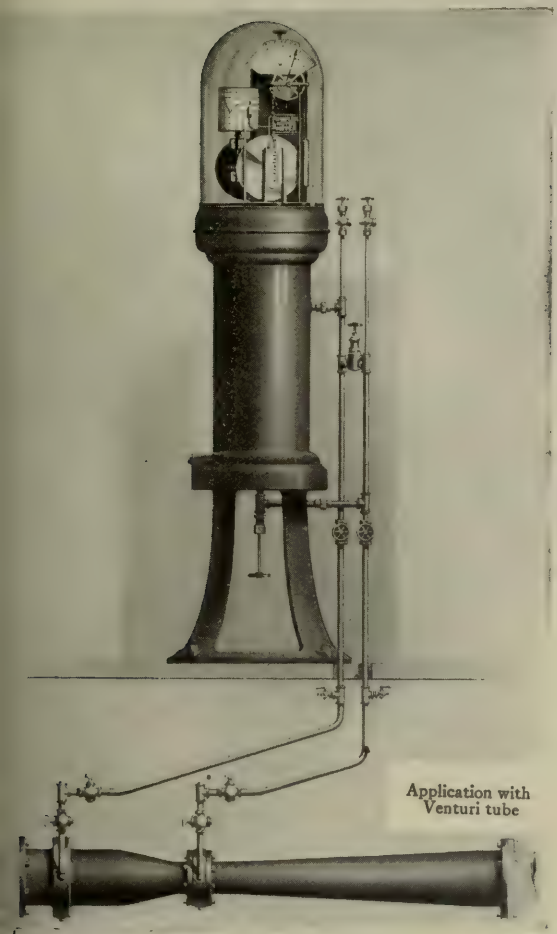
The Luitwieler Pumping Engine Company, of Roche N. Y., in a catalog entitled "Luitwieler System of Pu ing (Non-Pulsating Pumps)," gives an exposition of value of its system in service in water-works, boiler ing, manufacturing plants, and all other purposes which pumps are used.

Sprayers for Park, Field and Orchard.

The Deming sprayers, including pumps, nozzles and ac sories for all spraying conditions in park, field, gar vineyard, orchard and greenhouse, are described with merous illustrations in the 1919 catalog issued by Deming Company, Salem, Ohio.

Plumbing Equipment for Comfort Stations a Municipal Buildings.

The Rundle-Spence Mfg. Company, Milwaukee, W issues an illustrated catalog of special interest to munic and public officials and all others interested in the sub of sanitary toilet equipment, drinking fountains, etc., able for schools, jails, city halls, and county court hous



Application with Venturi tube

LEAKS COST MONEY

Do you know your water consumption? Can you tell *accurately* just how much water leaves your reservoir every day? Unless you can answer these questions satisfactorily you can't tell how much money you are losing on account of pipe joints, fixtures, etc.

The SIMPLEX METER REGISTER will give you an accurate, dependable record of all the water passing through the pipes.

Simple, accurate and convenient to read.

Practically frictionless in operation. A patented specially shaped float resting on mercury rises and falls in exact proportion to the rate of flow. The movement is transmitted directly to the pen arm without intervening gears, levers, links, etc., to cause friction or lost motion.

This sensitive action responds quickly to the smallest increments in the rate of flow and consequently enables the use of a Venturi tube with the largest permissible throat.

This means decreased friction and reduced pumping cost.

This is why SIMPLEX METERS are so popular among engineers intimately familiar with Venturi practice.

We are also headquarters for Rate Controllers, Filter Gauges, Weir Registers, Pitot Tube Recorders for water waste surveys and other waterwork specialties.

Write for copy of bulletin giving full details.

SIMPLEX VALVE & METER COMPANY

112 North Broad Street, Philadelphia, Pa.

Representatives: Mr. Geo. W. Stetson, 141 Milk St., Boston, Mass.; Hankin & Co., Montreal, Toronto, Vancouver; Water Works Supply Co., San Francisco, Cal.; C. J. Justice, Lytton Bldg., Chicago; A. MacLachlan, Rockefeller Bldg., Cleveland; Chas. McIntosh, Dime Bank Bldg., Detroit, Mich.

Also Manufacturers of Controlling Altitude Valves for Reservoir, Standpipes; Rate of Flow Controllers Loss of Head and Rate of Flow Gauges for Filters; Automatic Air Valves.

CAREY
Elastite
NAME REG. U.S. Patent Office
EXPANSION
JOINT

Often prevents thousands of dollar

of damage because it →

CAREY Elastite

NAME REG. U.S. Patent Office

EXPANSION JOINT

Fully Safeguards Paved Streets from Cracking or Buckling



ELASTITE Expansion Strips are sure to be sufficient for all expansion because they are of exactly known and always uniform thickness, whereas poured joints may be narrow and uneven in spots, causing trouble.

Carey Elastite consists of a heavy body of asphalt compound sandwiched between two layers of high-grade asphalt-saturated felt.

It does not melt in summer nor become brittle and crack in winter. Elastite remains elastic and resilient, adheres to the brick and wears as long as the pavement itself endures. Much less expensive to install than poured joints.

Its merit has been demonstrated on the streets of Philadelphia, Los Angeles, Baltimore, Des Moines, Nashville, Cincinnati and other leading cities. For complete information, address

THE PHILIP CAREY COMPANY

8 Wayne Ave., Lockland CINCINNATI, OHIO





THE New York City Fire Department is confronted by a tremendous responsibility. It has more property to protect than any other fire department in the world.

There has been constant study on the part of those in authority to increase its efficiency.

We are proud of the American-LaFrance record of performance in New York's fire department history for this company has furnished the majority of the essential fire fighting apparatus during the past seven years.

In 1912 twenty-five tractor drawn aerial trucks were built by us; in 1917 twenty-five more pumpers were furnished, and fifteen more pumpers are now building at our factory.

This makes a total of sixty-five pieces of American-LaFrance motor fire apparatus in the New York Department.

IT IS POSITIVE TESTIMONY THAT

NOTHING TALKS LIKE ACTUAL PERFORMANCE

AMERICAN-LaFRANCE FIRE ENGINE COMPANY, IN

ELMIRA, NEW YORK, U. S. A.

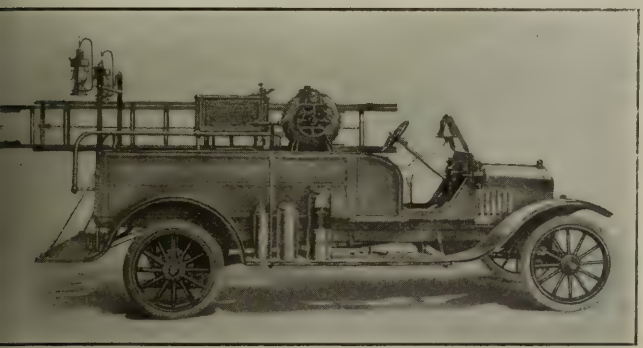
New York Boston | Pittsburg Chicago | San Francisco Philadelphia | Atlanta Denver | Portland, Ore. Los Angeles | Dallas Washi

CANADIAN FACTORY

American-LaFrance Fire Engine Co., of Canada, Ltd., Toronto, Ont.

AMERICAN-LAFRANCE FIRE APPARATUS ON FORD CHASSIS

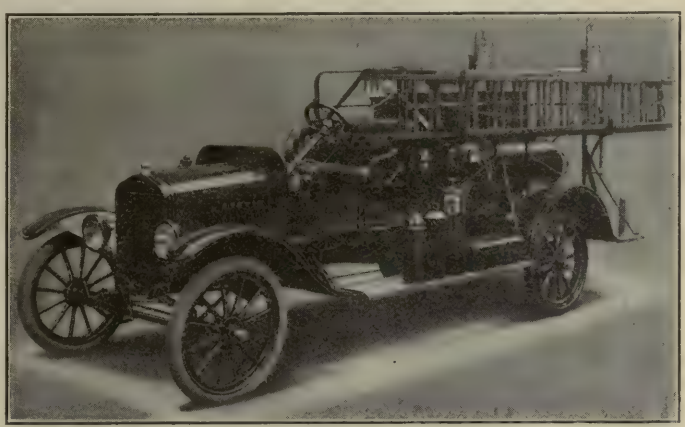
Fire Car to Meet the Requirements of Any Small Town or Village



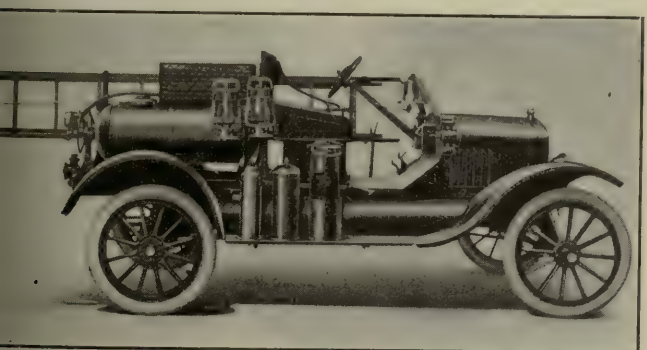
erican-LaFrance Combination Hose & Chemical Car On Ford One Ton Chassis.

Designed for the small towns and villages equipped with water pressure system. It is equipped with a hose body for 1,000 ft. 2½" fire hose—1 40-gal. Champion Chemical Tank, 1 20-ft. Extension Ladder, 1 12-ft. Roof Ladder, 2 Babcock Fire Department Extinguishers, Axe, Crowbar, etc. **Over 50 already in service.**

Designed to meet the exing fire conditions in any all town and village which quipped with, or without, er pressure system. Alst a complete fire departnt in itself. It is equipped h 2 35-gal. Chemical nks arranged to throw a tinuous chemical stream, 1 ft. Extension Ladder, 1 ft. Roof Ladder, 2 Babk Fire Department Exguishers, Axe, Crowbar, necessary indispensable -fighting tools.



American-LaFrance Double Tank Chemical Car on Ford One Ton Chassis.



erican-LaFrance Double Tank Chemical on Ford Touring Chassis.

One of the most popular fire cars among the small towns and villages. Except for the size of chassis and a few changes in equipment, this car is practically the same as the one above.

Over 240 already in service.

These cars afford maximum fire protection at the lowest possible cost to any small community. **Literature and details sent upon request.**

SUNDRY SALES DEPARTMENT

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

Elmira, New York, U. S. A.



When You Do Select Playground Apparatus Select the Best

Unless playground equipment is made of high grade material and by expert mechanics, it may do more harm than good. Poorly made apparatus may break and cause serious injury to the children. You surely do not want to spend money for that kind of apparatus, or for apparatus that requires constant repairing. If you are going to equip playgrounds—do the job right. Buy the apparatus that has been chosen by the majority of other cities—EVERWEAR APPARATUS. With Everwear Equipped playgrounds, you are safe and the children are safe.

If you are interested in building up a better and healthier American Citizenship, send for our catalog.

The Everwear Manufacturing Company
Springfield, Ohio

EVERWEAR
STANDS WEAR AND TEAR



Every Sensible Minded Person Admits

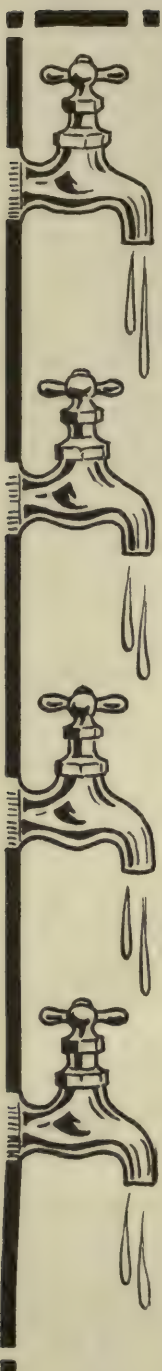
that Playgrounds and Recreation Facilities were never more essentially necessary than at the present time.

During the last two years there has been an increase of juvenile wrong doing in many sections of the country which shows conclusively the increasing need for properly supervised play for children during the period of reconstruction.

Is your community properly equipped with playgrounds? If not the suggestions contained in our large illustrated booklet will interest you.

The Everwear Manufacturing Company
Springfield, Ohio

EVERWEAR
STANDS WEAR AND TEAR



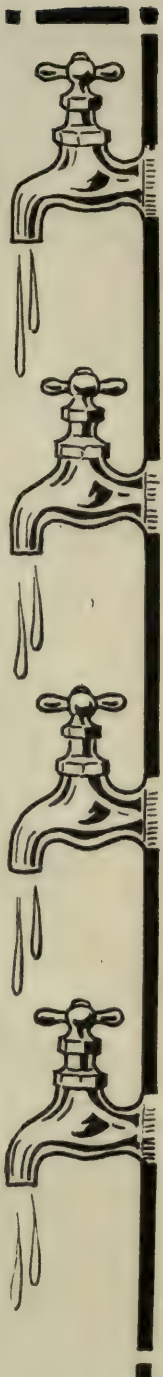
DRIPPING DROPPING

Everyone knows that a leaky faucet means a big water waste in the course of a year. But everyone does not stop to figure out how many **more** leaky faucets there are in buildings where there are **no meters** on the supply lines than in buildings where **every drop is registered** and paid for thru the night and day watchfulness of an accurate water meter.

"John," says your wife to you when you return from the office, "the faucets in the kitchen sink have been leaking for a month, aren't you going to get the plumber to fix it?" "Why should I worry," you reply, "as long as the town does not install water meters. Jones tells me that most of his faucets leak and not only that but in the cold weather he turns them on at night so there will be no danger of freezing. I pay the same for my water that he does, so why should I be continually out of pocket in trying to check small leaks."

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter

NEVER STOPPING



Oh, yes, we sell water meters. Not only that but we sell more water meters than any other manufacturer does. However, this little fact does not prevent our insisting that meters are the most profitable investment for any water-works plant.

Some day, sooner or later, your town will realize the error of its ways and the water services will be metered. But when you come to purchase the meters don't forget that there is a difference in water meters, just as there is in watches. Some meters which look tidy and ship-shape on the outside are anything but correct after they have been used for awhile. The interior mechanism of every type of Trident Meter is worth studying. Your own watch is not more painstakingly built.

We have several booklets telling about water waste problems and their solution. If you think the water-works plant in your town should render better service and produce more revenue, you will find these booklets mighty interesting.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
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Makers *of the* Trident Water Meter

Not All Junk



"JUST JUNK," you say. That is where you are wrong, friend. True the car is loaded with material cleared away for the new Union Station, Chicago, material which has been in service from ten to forty years, with that Cast Iron Pipe for the longer period.

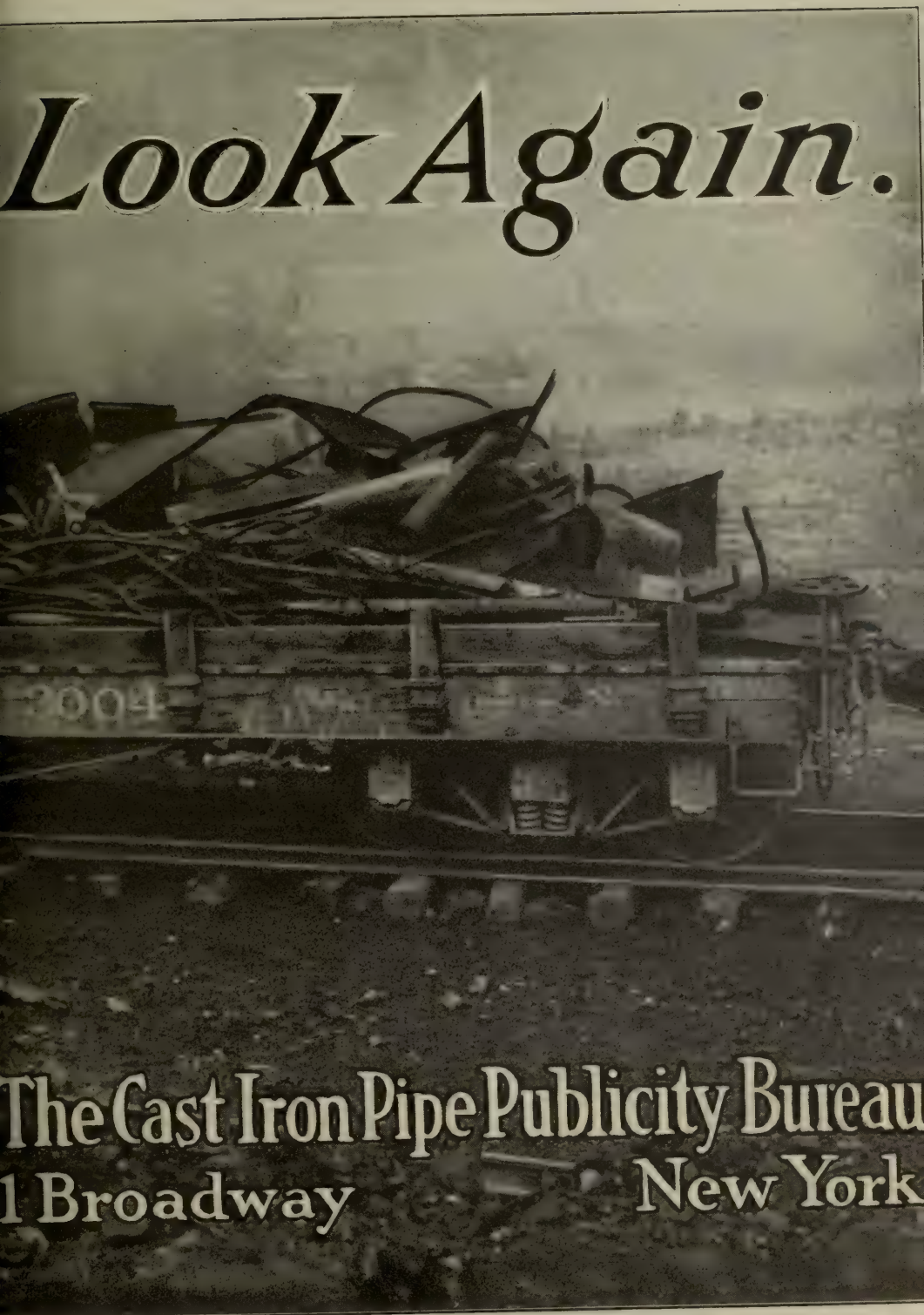
"Junk!" You're right; all that other material is junk and not worth much, but that

Cast Iron Pipe Is As Good As New

and, what is more, it is worth more today than its original cost.

"Looks Rusty." Sure it does, and sure it is that it is that surface rust which, by excluding oxygen, prevents combustion—rusting is but slow combustion, you know—and thus enables CAST IRON PIPE TO GIVE SERVICE MEASURED BY CENTURIES.

Junk? Not much! That pipe is the stuff that makes an initial investment a permanent one.


Look Again.
The Cast Iron Pipe Publicity Bureau
1 Broadway
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PUMPS—COMPRESSORS—CONDENSERS—METERS

WORTHING

Worthington Works, Harrison, N. J.
Blake & Knowles Works, East Cambridge, Mass.
Deane Works, Holyoke, Mass.
Hazleton Works, Hazleton, Pa.



Aboard the Yankee Destroyers

—down in the very heart of their machinery, you'll find a name known throughout the American Navy—Blake and Knowles, of Worthington.

And you may find this name not once or twice, but on certain types of destroyers as many as 26 times—on 26 separate pumps, faithfully performing their prosaic but vitally important duties.

Just see the diversity of the list:

Main Air Pumps	Fire and Bilge Pumps	Oil Cooler Circulating Pumps
Auxiliary Air Pump	Evaporator Feed Pump	Fuel Oil Service Pumps
Main Boiler Feed Pumps	Fresh Water Pumps	Fuel Oil Booster Pumps
Auxiliary Boiler Feed Pumps	Lubricating Oil Pumps	

All made by Worthington, at our Blake & Knowles Works, which for 50 years has served both our Navy and our merchant shipping.

It was Worthington organization and experience, plus a large expansion in our East Cambridge shops, which made possible some remarkable delivery records—not merely on the thousands of pumps we made for the 150-destroyer program, but also on equipment for many other war-craft. And it is this same organization, enriched by this war experience, that bids fair to play a major part in the upbuilding of our merchant marine.

WORTHINGTON PUMP AND MACHINERY CORPORATION

***Executive Office:* 115 Broadway, New York City**

Branch Offices in 24 Large Cities

IL & GAS ENGINES — MINING MACHINERY

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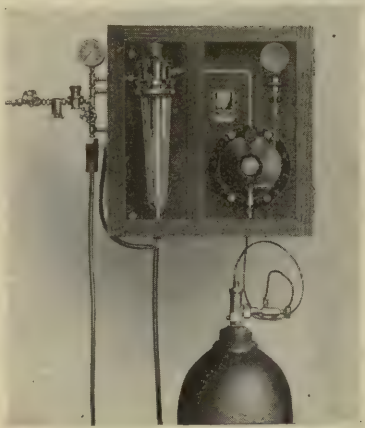
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Special Bulletins on Request.

Snow-Holly Works, Buffalo, N.Y.
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Prevention is Better than Cure!



W & T Manually-controlled Solution Feed Chlorinator Type M. S. A.

You cannot prevent melting snows and heavy Spring rains from washing the polluting materials accumulated during the Winter into your Water Supply—

You can prevent these disease-creating organisms from menacing the lives of your community, if you will sterilize your Water Supply with Liquid Chlorine—the 100% sterilizing agent—applied by

"W & T" EQUIPMENT —the Standard Chlorinator

Is your City or Town prepared for the emergency?

If not, take steps at once to install "W & T" Apparatus and secure absolute protection from TYPHOID and other water-borne disease.

"W & T" Chlorinating Equipment has given ideal service in hundreds of municipalities, large and small, for water and sewage purification. It is so constructed on the unit system that it is readily portable and can be installed and placed in operation within a few minutes after its arrival.

The Cost? From 17 to 50 cents per million gallons.

Send today for 64-page Booklet, "Chlorine Control Apparatus."

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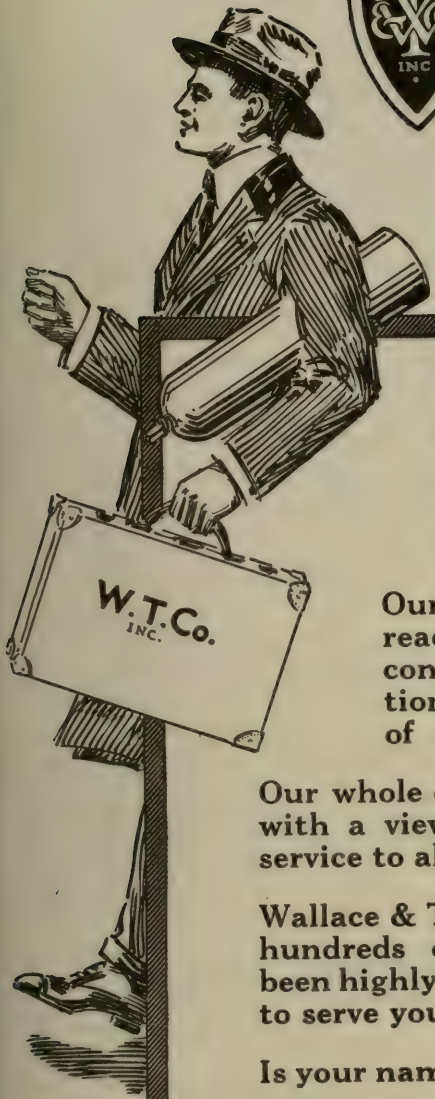
550 Peoples Gas Bldg., Chicago, Ill.

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Service is "ready" Service



OUR engineering staff is always ready to give advice in all problems on Water and Sewerage Disinfection.

Our erecting staff is always ready for field service, whether connected with new installations or with the maintenance of existing apparatus.

Our whole organization is constructed with a view of instant and complete service to all of our clients.

Wallace & Tiernan Service on all of the hundreds of installations made has been highly endorsed. We stand ready to serve you equally well.

Is your name on our mailing list?

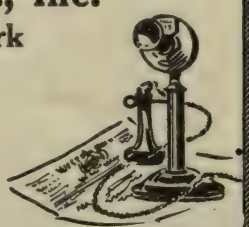
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Chemicals for Water Purification

We manufacture highest grade of

Sulphate of Alumina

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Castner Electrolytic Process

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CHLORIDE OF LIME

In 200, 450 and 750-lb. drums Strongest, quickest-settling, most reliable.

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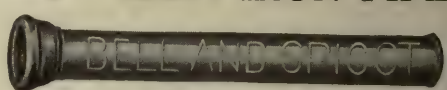
Pure anhydrous, for use with any control apparatus. In improved and convenient cylinders, 105 and 150 lbs. net.

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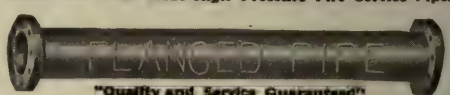
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Manufacturers of **CAST IRON PIPE**



for WATER—GAS—CULVERTS—SEWERS

Special Castings:-Also Flexible Joint Pipe-Cylinders-Tubes, Milled and Plain Ends-High Pressure Fire Service Pipe.



"Quality and Service Guaranteed"

WARREN FOUNDRY & MACHINE CO

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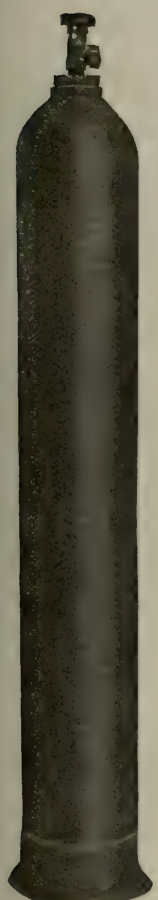
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Liquid E B G Chlorine

Quality and Service

Plus



Look for the RED Cylinder

**We wish to express our satisfaction with the quality of gas which we have had this past year, and also for the service rendered. Under great shipping difficulties we have been able to get our supply regularly and with one exception always had a small reserve. This means a great deal to us in water sterilization.*

From the day E. B. G. Liquid Chlorine was first put upon the market 12 years ago, its quality has been vigorously maintained at the highest possible standard.

The greatest care is taken in every department of its manufacture to assure a product of unvarying reliability—a gas entirely free from any foreign impurities—100% pure—100% efficient.

"E. B. G." Service has been developed to match the high quality of E. B. G. Liquid Chlorine.

Our Plant at Niagara Falls, N. Y., covers 10 acres and has been pronounced by Government officials to be the most completely equipped and modern plant of its kind in the world. It has a capacity equal to any demand.

For whatever purpose intended E. B. G. Liquid Chlorine means a gas of *real* quality, and a service to your satisfaction.

We invite your inquiries

ELECTRO BLEACHING GAS COMPANY

Pioneers and Leading Manufacturers of Liquid Chlorine
PLANT: NIAGARA FALLS, N. Y.

Main Office: 18 East 41st Street, New York

Chicago Office: 11 So. La Salle Street
Canadian Representative: GENERAL SUPPLY CO. OF CANADA, Ltd.
Ottawa Toronto Montreal Winnipeg Vancouver

**Paragraph from letter recently received at our New York Office.*

Wastage and Leakage Must Be Stopped

THE Cole Pitometer will help. It cuts out all avoidable and unnecessary waste and leaks. It keeps tabs on your water supply and gives an absolutely correct chart record of the amount of water pumped daily. By comparing this amount with the amount consumed you can readily see whether there is a wastage and just how much. The Cole Pitometer also shows whether your pumping machinery is keeping up to the mark.

Bear in mind that by reducing this waste, it is possible to dispense with a considerable amount of pumping, which means less steam, fuel and labor. Don't you think this saving worth while?

The Cole Pitometer is portable, accurate, sensitive and durable, and should be used in every station and on every gravity supply main.

Write for our booklet to-day.

The Pitometer Co.
55 Duane St. New York City

THE X-RAY FOR PUBLIC WATER SYSTEMS
TRADE MARK

GREAT WESTERN ELECTRO CHEM CO.
BUSH, BEACH & GENT
SOLE AGENTS
CARBON TETRACHLORIDE
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A Contract is a Contrac

Liquid Chlorine

Soda Ash

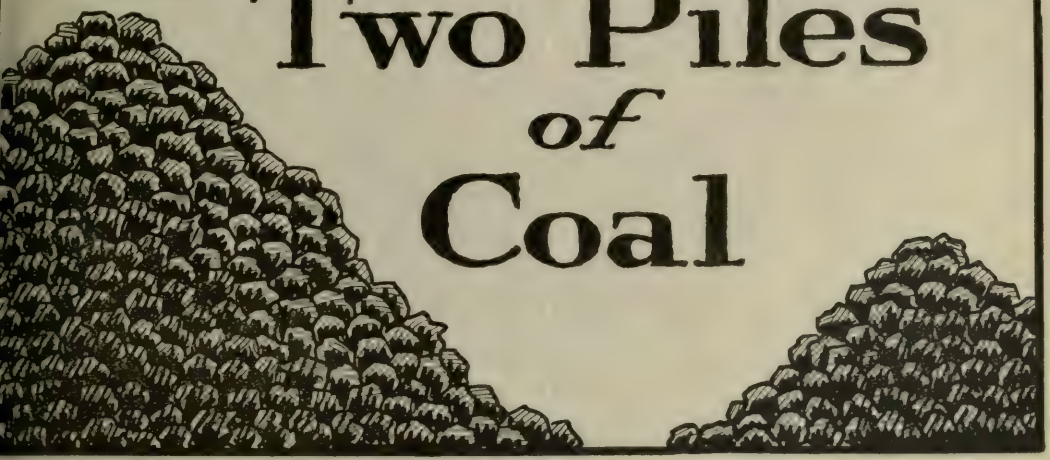
Chloride of Lime

80 Maiden Lane
NEW YORK

Holbrook Building
SAN FRANCISCO

PHILLIPS UNIVERSITY LIBRARY

Two Piles *of* Coal



The larger pile of coal is the amount necessary to pump a certain quantity of water thru clogged pipes. The smaller pile shows the fuel needed to pump the same amount of water thru the same pipes after cleaning by the National Method.

Of course you may have money to throw away on fuel and unnecessary labor. More likely, however, you are studying to conserve every ton of coal and keep your other expenses down as low as possible. Also your fire department and your health department will find it easier to make a good showing with clean water mains rather than with filth clogged pipes.

Stop a Minute and Think.

Do you know that other cities instead of going to the expense of new pipe lines are having their old clogged mains made as good as new thru cleaning by the National Method?

Our little book "The Cleaning of Water Mains" tells the whole story. The book is free if you send your address.

National Water Main Cleaning Co.,

Hudson Terminal Bldg.
New York City.

SMITH
Hub End Valves



are simple in construction. Built for service and durability, and used thruout the country by water departments. Made with Heavy Iron Body and Bronze Mounted Gate Valves. Can be operated in any position. Stems made of high grade Manganese Bronze tensile strength 60,000 lbs. Valves made for water, steam, gas and with flanges or for universal pipe.

You will be interested in the printed matter descriptive of this valve and other water works specialties. Write for it today.

Also makers of:
Fire Hydrants
Brass Goods
Valve Inserting Machines
Tapping Apparatus.
Corporation Tapping Machines and other water works goods.

THE A. P. SMITH MFG. CO.
EAST ORANGE, N. J.



LUDLOW
GATE VALVES

For Water, Steam, Gas, Oil, Hydraulic or Electric Operated.

All styles, any size, all pressures.

FIRE HYDRANTS

Frost-Proof, Simple-Efficient

All parts removable without digging up hydrant. Special device prevents street from being flooded should stand pipe be broken. Minimum expense to install and maintain.

Write today for illustrated catalog of our Valves and Fire Hydrants.

THE LUDLOW VALVE MFG. CO.
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VALVES

P&C CO · P&C CO

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Feed Water Heaters
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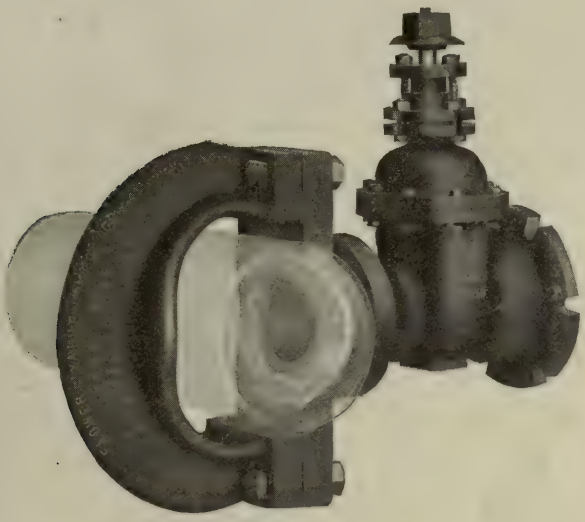
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ENGINEERS
IRON FOUNDERS
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Pipe, Hydrants, Valves, Gas Producers, Pumps, Gas Work Materials



A Revolutionary Improvement in Sleeve Construction

The new Flower sleeve (patented September, 1918) is unquestionably the greatest time and labor saving improvement made since the first sleeves were built.

It comes to you ready for installation with the lead in place. The lead is firmly imbedded in dove-tail joints in the sleeve and shaped to the contour of the pipe, which eliminates the difficulties of pouring in the trench. This permits making a smaller trench and setting the sleeve without the necessity of pouring lead for the joints.

The Flower sleeve simply needs to be bolted firmly in place, the tapping machine placed on the hub of the tapping valve, and the tap made in the usual way, with any standard tapping machine on the market. Little or no caulking is required in making the joint between the pipe and the sleeve proper.

The sleeves are all cored for class "B" pipe. The bolts used are "Sherardized," preventing rust, and are of ample size and length to permit the use of class "C" pipe or even larger. If caulking is necessary, the area is so small and the caulking joint so easily accessible and in full view, that it is easily done without special tools.

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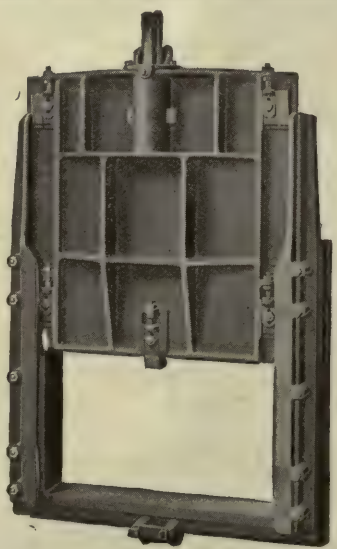
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Sluice, Head and Penstock Gates
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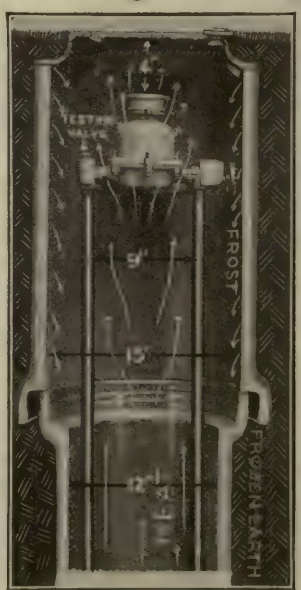
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In localities where ground freezes 3½ feet deep and more, risers are protected by 12-inch pipe down to service lines. We save you money on installation and guarantee every setting.

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YOUR CITY CAN HELP SAVE

Saving Water Means Saving Coal, Machinery and Labor. **This is Vital During the Period of Reconstruction.**

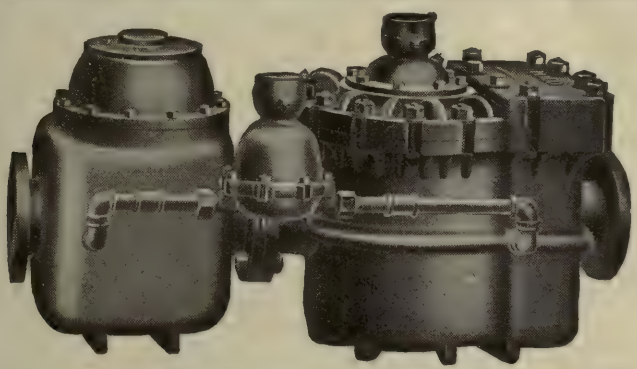
The installation of Lambert Water Meters will save the water which conserves the coal and labor.



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Compounding Valve Attached to Nilo Meter

The Union Compounding Valve Makes it Possible for any Large Meter to Register the Trickle as well as the Rush.

Simply take the valve and the small meter and attach them to the large meter, and you have an accurate and simple compound meter at a remarkably low cost.

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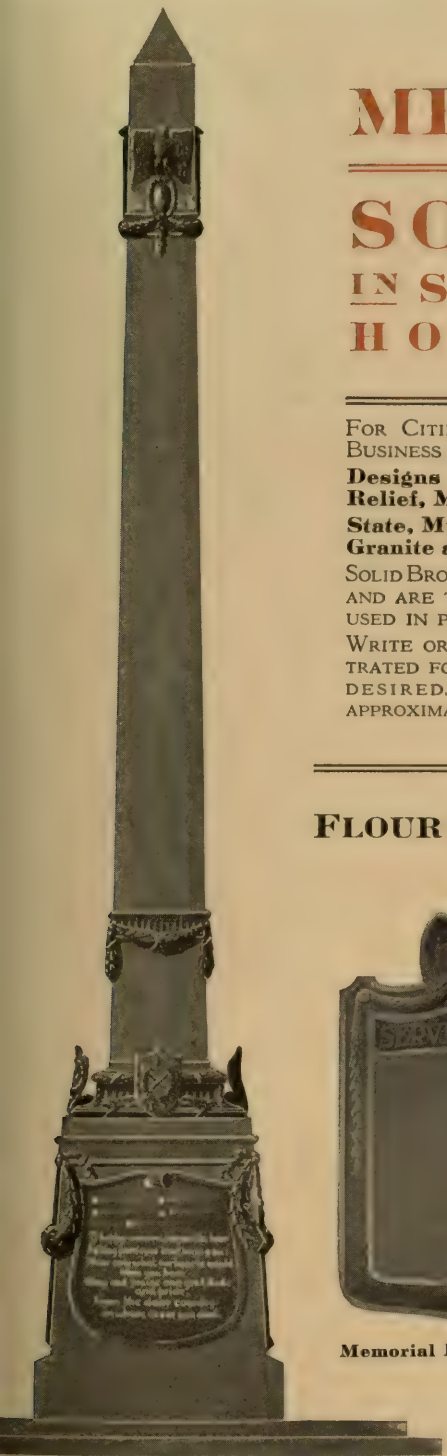
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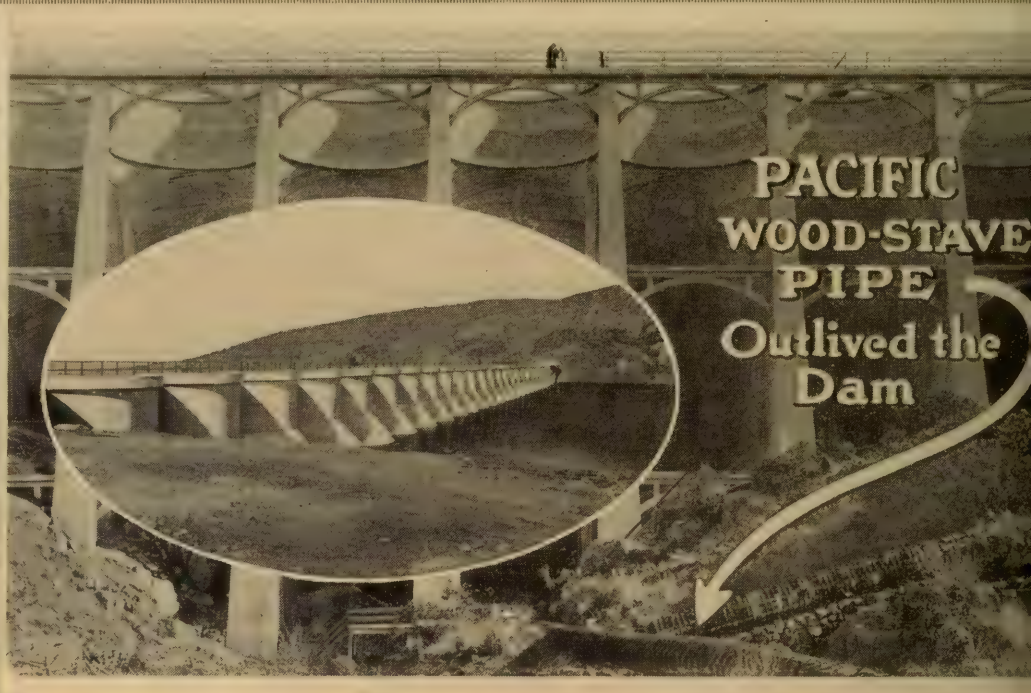
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—Two Dams Were Needed— but only One pipe line

We've many instances on record where wood-stave pipe has given years of service, but the line installed for the Cuyamaca Water Co. near San Diego, Cal., is a particular case. It was built in 1896 and at the same time a dam was constructed to impound the water it carries. In 1917 a new dam had to be built, but the self-same pipe-line stayed on the job —perfectly good and ready to do its work again. It's there today and will be for years to come.

Long life is a characteristic of Pacific wood-stave pipe. Every care is taken in its manufacture from start to finish. Materials are selected with the utmost care. It is built by experts. Every detail is watched from the time the first stave is cut until the finished line is laid and delivered. You are assured of getting the best it is possible to construct when you buy Pacific Pipe.

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PLAYGROUND EQUIPMENT

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We have "Everything for the Playground

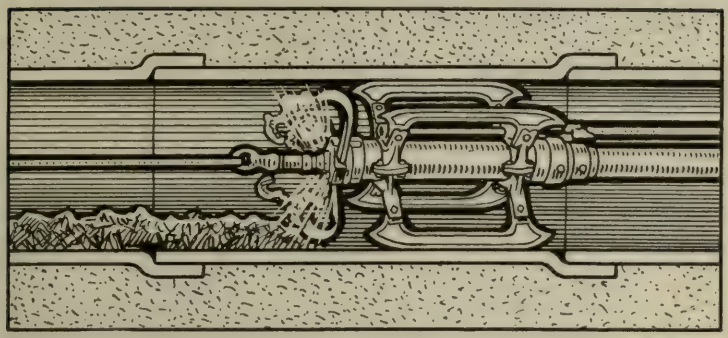
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With a Cleverness which is almost Human

The Turbine Sewer Machine goes along through your sewers cutting out roots and other obstructions and forcing out the accumulations of dirt which are stopping up your sewers and thereby causing just the sort of unhealthful conditions which breed epidemics.

The Conditions of Your Sewers Inside

is a vital question. Some one in your city has got to face the problem—and the sooner the better.

Are any of your sewers partially or wholly clogged with filth? Do you realize what an unhealthy condition this represents? Do you realize that at the present time the health of your citizens is the most essential of all essentials?

Face the matter squarely. You need a Turbine Sewer Cleaner—the only machine which will do the work for you in a thoroughly satisfactory manner.

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If you need sewer rods, we make them too—and once you place your first order for sewer rods with us you will never want to buy elsewhere.

Satisfactory service is the keynote of our success. Send your address so we can send our big illustrated folder showing how other cities have solved the clogged sewer problem.

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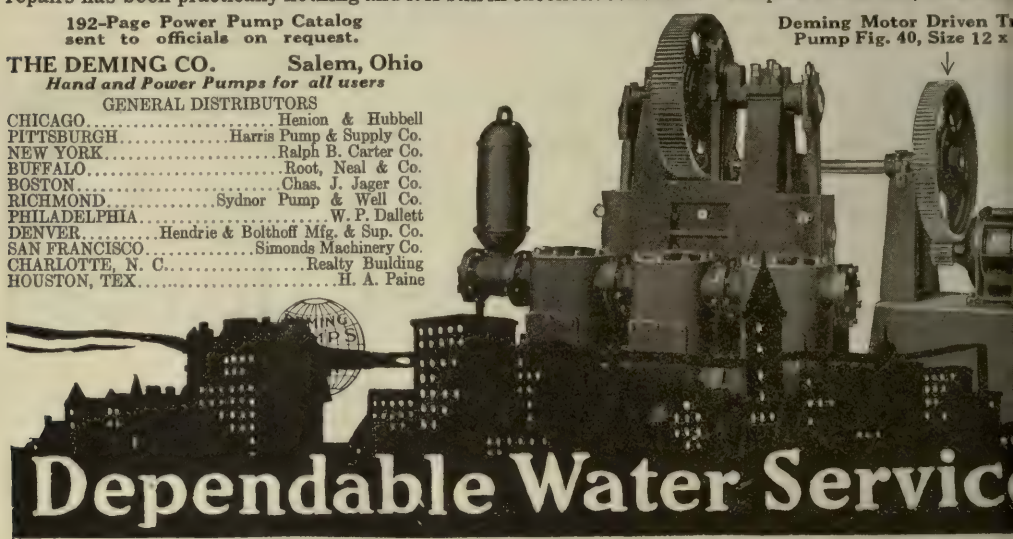
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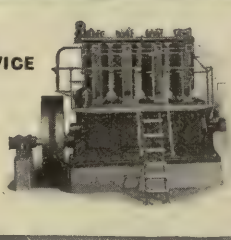
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WATERWORKS
ELECTRIC LIGHT
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Sizes
6 to 325 hp.



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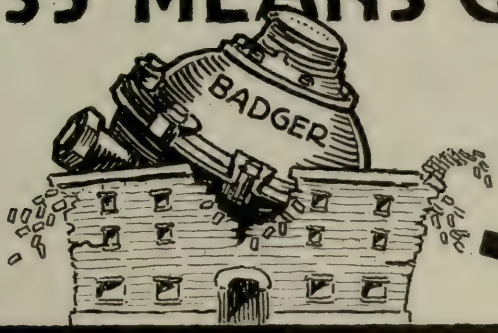


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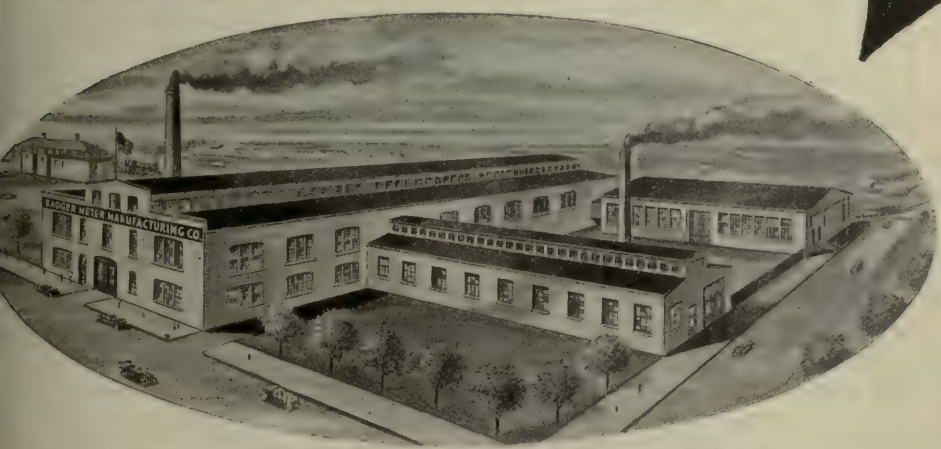
When a manufacturer turns out a product of real merit which combines many advantages not included in any other article in the same line, it is a natural result that there should be a steady growth in the sales of the superior product.

The Badger meter is recognized as a superior product in the water works field and the steadily increasing use of Badger meters by leading water works departments thruout the country indicates plainly that water works superintendents and managers appreciate a good thing when they see it.

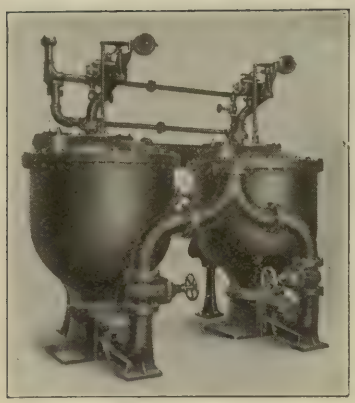
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AUTOMATICALLY RAISE SEWAGE FROM LOW TO HIGH LEVEL SEWERS OF PURIFICATION PLANT; ALSO SUITABLE FOR PUMPING SLUDGE.

City Engineers, Sewage Disposal Superintenden and others should write for free descriptive bulleti

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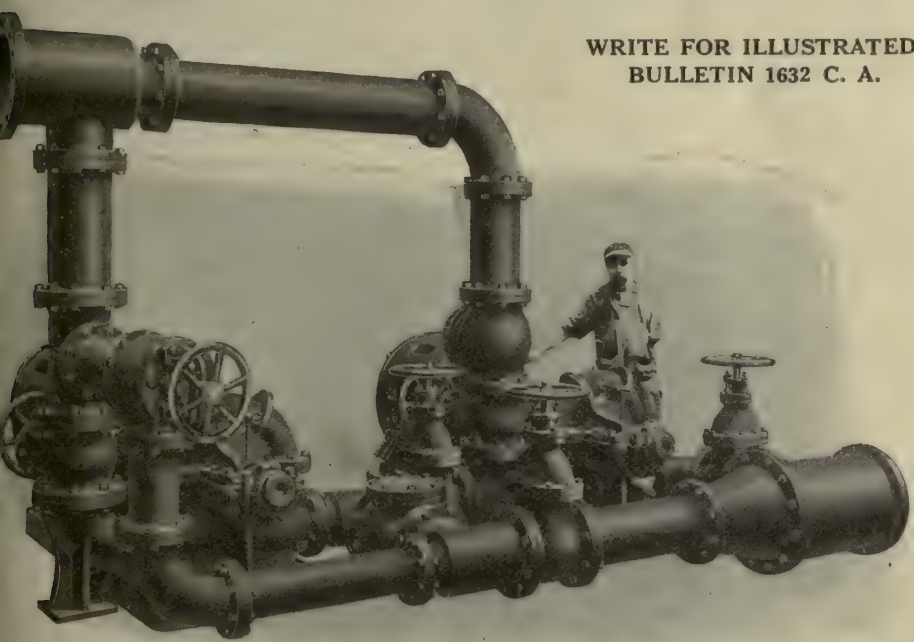
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Maintenance expense is practically nothing and the cost of replacements and attendance are reduced to a minimum.

The arrangement illustrated below shows equipment and piping which will provide both fire and domestic pressure using single stage contrifugal pumps and constant speed induction motors, the most simple, reliable, and ecomonical apparatus.

Ask our engineers to make recommendations for your conditions.

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SEWER CLEANING MACHINE

The Kuhlman Sewer Cleaning Machine will solve your troubles. Our machine is second to none.

PREWAR PRICE HAS BEEN ESTABLISHED

which should interest city officials to purchase now instead of waiting.

Mail us your address so that we can send you pictures and explanatory matter showing how other cities are keeping their sewers in good shape with this sewer cleaner.

Champion Potato Machinery Co.
338 Sheffield Ave.
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A National Reputati

The exigencies of war put a peremptory on really necessary construction work. To that work is doubly necessary because plants have borne the strain of extra-bu with old equipment and no chance for rene

Reconstruction time has come. Surely t never was a better time than now for abolis forever the nuisance and danger of overh lines. Put your wires underground. Use Ora burg Fibre Conduit because it's the best.

Booklet D tells why.

THE FIBRE CONDUIT COMPA
ORANGEBURG, N. Y.
New York Boston Chicago San Franc

MILLER SIPHONS end sewage worries

Put a **Miller Siphon** in the sewer that is likely to become stopped up. Install it, then forget it—it works automatically. It will flush the sewer clean and at regular intervals. A **Miller Siphon** isn't an experiment—it has been "doing duty" for twenty-five years.

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Pacific Flush-Tank Company

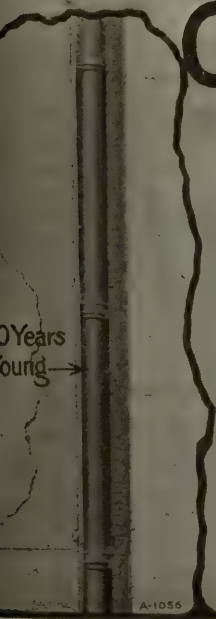
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CAST IRON PIPE

installed in above building in 1858, provided constant sanitary service until 1918 subway construction demanded removal of the building. But the pipe is far from having outlived its usefulness. The photo of a section of the leader line shows it is 60 years young and still capable of giving for many years

SANITARY and ECONOMICAL SERVICE



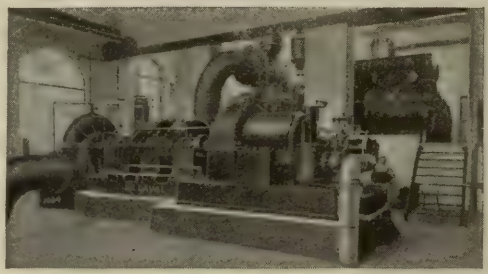


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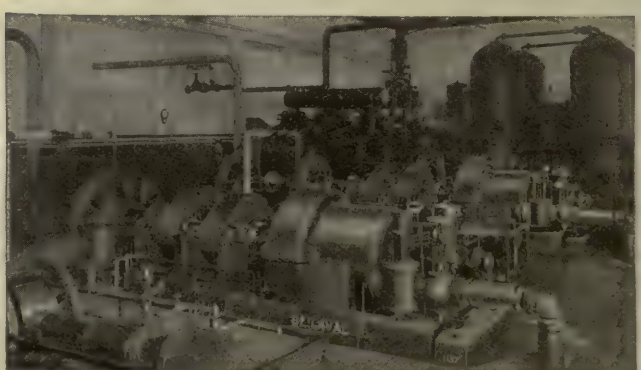
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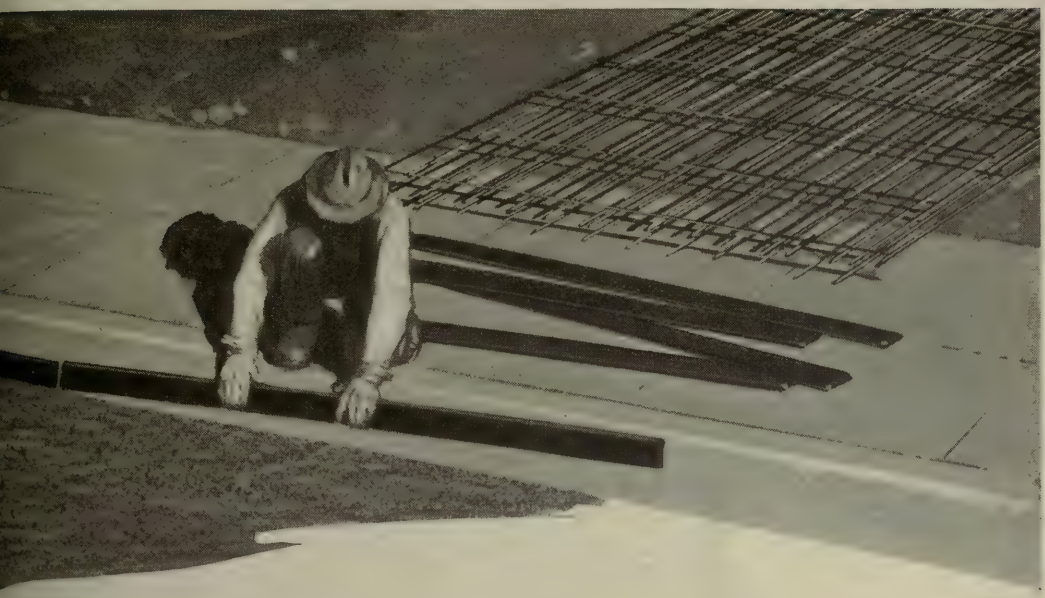
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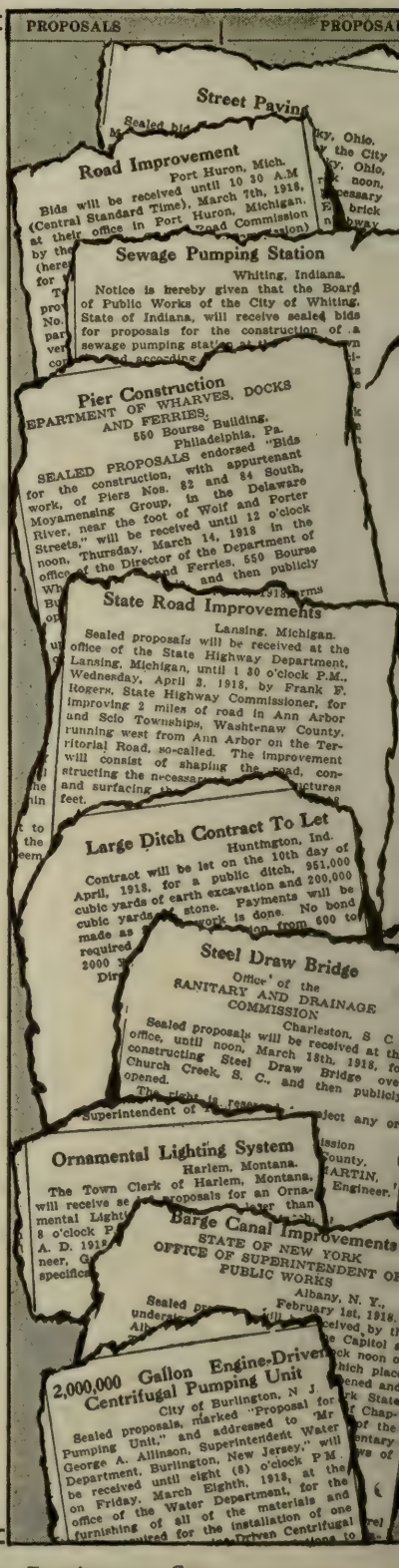
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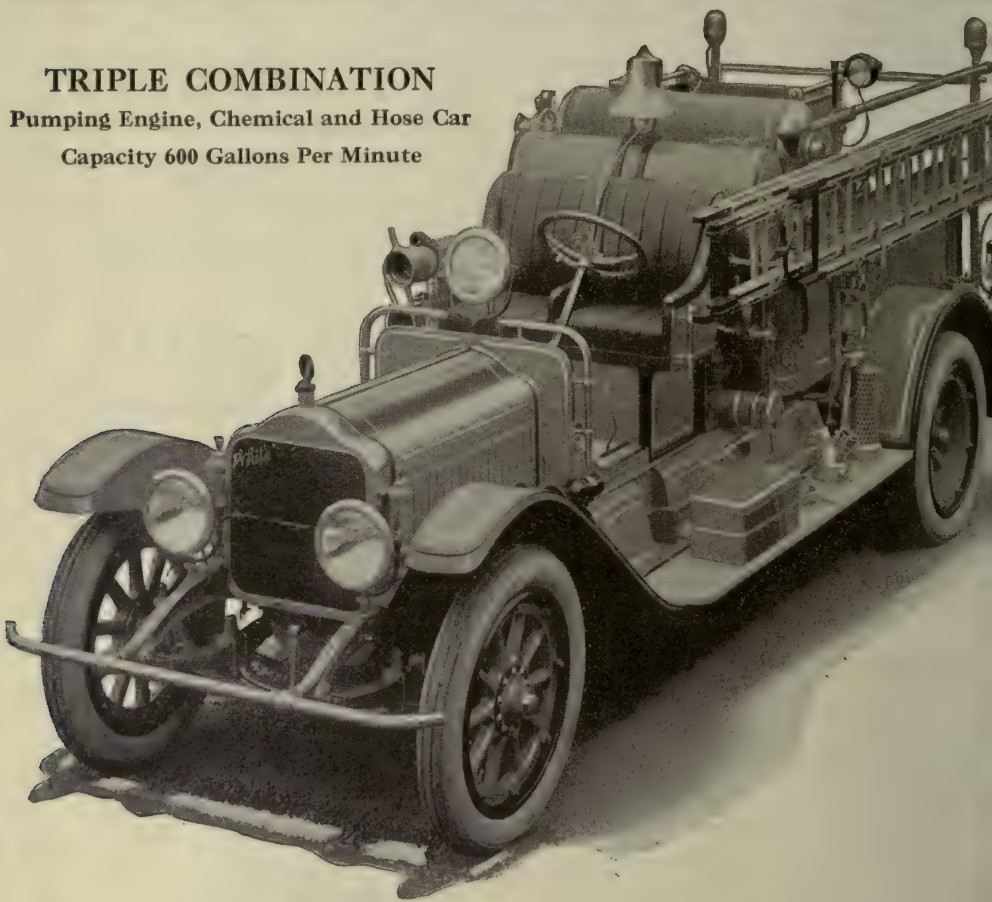
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APRIL, 1919

Volume XX
Number 4

Good Roads and Health

Drainage a Great Factor in Preserving Both Highways and Health

By T. H. D. Griffiths, M. D.
Epidemiologist, U. S. Public Health Service

In many ways life suggests roads, for ve refer to it as our "journey," and when ickness attacks us, we are anxious to get n the "road to recovery." Practically veryone concedes that, of necessity, good oads and good health go hand in hand. ike good health, good roads touch practi- ally every phase of life. Good roads bring bout a closer relationship between city life nd rural life. They shorten distance and roaden the conception of life; they in- rease prosperity, advance education, help o apply religion and promote health and appiness. Good roads should do these hings in every instance. But they do not lways do so, and so-called "good roads" building may even frequently contribute to ill health.

Road Drainage and Malaria

Malaria, or chills and fever, is one of the preventable diseases, and it is one of the most serious diseases; not that the death rate is so high, but it is a great and rapid destroyer of energy and vitality, so that it leaves its victims with low resistance and they succumb easily to typhoid, pneumonia, influenza and other diseases. It is not always possible to judge the seriousness of a disease by the deaths charged to it. Malaria produces a greater economic loss in the Southern States



BAD ROADS HOLD UP TRAFFIC OF ALL KINDS—WEEDS AND STAGNANT WATER IN ROADSIDE DITCHES PROVIDE BREEDING PLACES FOR MALARIAL MOSQUITOES

than any other one factor. It is estimated that from malaria alone twelve Southern States blindly meet a loss of $100,000,000 every year. The big loss comes in the extended period of convalescence, or when the man is "half sick" and tries to work. It was found by the United States Public Health Service in examining the blood of 25,000 people in the South—people not supposed to be sick—that as many as 42 per cent in one locality were infected with malaria. Malaria is a disease carried from a person infected with it to a well person thru the bite of a certain kind of mosquito, and all mosquitoes hatch out of water where the mother mosquito has laid her eggs. The malaria-bearing mosquito, called Anopheles, lays her eggs in the particular kind of waters seen frequently up and down the sides of roads, in the pools that fill the grassy-edged borrow-pits and roadside ditches that somebody left undrained when he thought he had finished a good road.

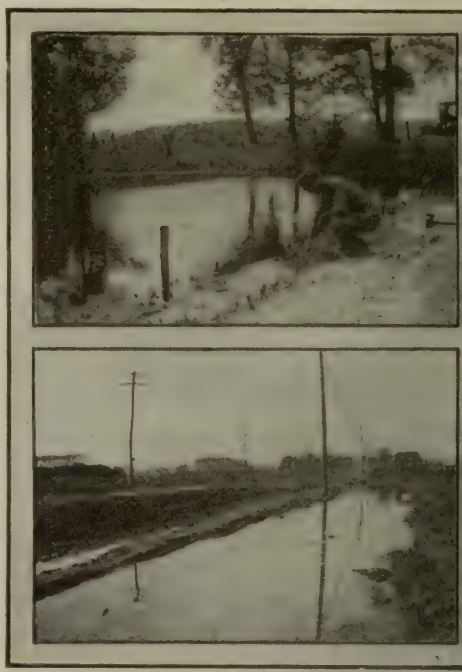
No road should be considered a good road if it contributes to disease along its course. The same is true of railroads. High or inadequate culverts that impound water contribute a share to the raising of mosquitoes and to the problem of malaria.

For the sake of the road-bed, for the sake of health, it is exceedingly important that all road-builders insist that borrow-pits be properly drained and that adequate culverts be provided, to prevent the formation of standing water along the roadside, or in near-by fields.

Good Roads and the "Flu"

There is another phase of the problem of good roads and health which is of great importance. Physicians have been greatly handicapped in reaching their patients, particularly during the influenza epidemic, on account of the abominable condition of roads. It seems possible then, that the terrible influenza epidemic, thru which we have just passed, may be turned to some advantage as an advocate of the building of good roads.

There is much sickness, especially in the country, where at certain times of the year people are denied medical assistance because of the impossibility of reaching them speedily. In one county which we know of, physicians have asked the farmers to meet them at the macadam road with a team, refusing to venture off the hard-surfaced



EXAMPLES OF BAD DRAINAGE

Above—Undrained borrow-pit. Below—Water i pounded on road on account of culvert being too hi

road with their automobiles, and they we well warranted in this, as the miring of a automobile might mean half a day's loss time and, in consequence, the failure of t physician to call upon a dozen other patien who were ill during the influenza epidemi Families in the country must wait a da sometimes two days, before the call for doctor is answered, because of the delay d in great part to bad roads.

It must be seen, therefore, that the do tor has a most excellent argument for goo roads. Bad drainage of roads produc stagnant pools, which breed the malari bearing mosquito. Therefore, bad draina not only ruins our roads, but also produc a disease among the members of our rur communities which prevents their workin to the best advantage for themselves, th community and the nation. Furthermor when illness visits a country home, the goo road, adequately built and drained, pr vides a quick means for the physician reach the home and check the illness ear in its career, when delay may mean month of suffering, possibly death.

Build good roads, provide adequate drai age, and thereby aid in maintaining th health of your community.

The Operation and Care of County Highway Trucks

By John Gunnison
County Highway Commissioner, Sauk County, Wisconsin

To successfully operate a fleet of trucks
county road work is a real man-size job
id should be undertaken with a square-
wed determination to put it over.

When To Use Trucks

The real field for trucks is hauling for
aintenance where material can be handled
pidly to the truck and the haul is over
asonably good surfaced roads.

I have in mind a job of resurfacing on
hich a 5-ton truck with 4½-yard body,
ade five and six trips regularly on an
½-mile haul, a 2-ton truck with a 2-yard
ody making the same trips with chips and
reenings.

This length of haul would be impos-
ble with teams, and while the hauling cost
rather high ($1.65 per cubic yard) there
re many instances where such long hauls
are necessary and trucks are the only solution for these long-haul repair problems.

To get real results from trucks, the drivers must have judgment. The loading and unloading must be accomplished without loss of time, and this means that power dump bodies must be used, loading chutes must be arranged so as to enable the loads to be trimmed without the use of a shovel, and there must be thoro team work with the man spreading rock on the road. In short, the trucks should run on schedule, and minutes unavoidably lost should not be taken out of the truck by speeding, either empty or loaded.

Advantage of Skilled Drivers

A real driver takes advantage of every opportunity to save his truck and speed the



A DIFFICULT HAUL UP AN 18-PER-CENT GRADE NEAR ONE OF THE QUARRIES AT WESTFIELD, WIS., EASILY ACCOMPLISHED BY MOTOR TRUCKS

work. As an example, one driver made five or six trips on a five-mile haul with a 7½-ton (6-yard body) truck over a hilly, surfaced road, one 7 per cent grade being nearly a mile long. The driver grumbled, demurrage piled up, and everything went wrong. Another driver, who had a pleasant smile and a clear eye, was put on. The truck immediately made eight or ten trips, making the hills on second and coasting down like an express.

The best way to get these real good men is to make them. Have your eye open for a young married or single man who is sober, is naturally quick to see cause and effect, and can or will try to find the reason why. Give him an idea of how his machine is constructed and some operating pointers as to lubrication and ignition, and put him on with the understanding that his salary will depend on the performance of the truck and bills payable, and the chances are that if you are a good judge of human nature in a short time you will get results.

Keeping Trucks In Repair

When your driver has gained experience at the county's expense, do not let go of him, don't let him get to the point where all knowledge of truck hauling has been gained, and, above all, show your appreciation of his services in the only substantial manner.

Where a county has four or more two-ton or larger trucks, I believe that a captain, who should be a machinist and a master of truck haulage, should be employed and that to him should be entrusted the control an care of the fleet.

There are times, even with the mos careful drivers, when accidents occu which might have been avoided if a thor inspection had been made at intervals o not more than two weeks. An accident tha has added to my sorrow recently wa caused by a large-headed cap screw ir securely locked in the ring gear, workin out until it fouled the pinion bearing, mak ing necessary the replacement of the rin gear, pinion, pinion shaft and bearings, bill of $91 for new parts, with labor an



THREE 2-TON REPUBLIC TRUCKS, A PART OF SAUK COUNTY'S FLEET

loss of time of truck, amounting to not les than $200 in total loss.

The fleet captain and the driver coul have taken down the axle on some Satu day at the county shop, found the loose ca screw before it had done any damag tuned up the motor, made minor repai and had the truck ready to climb a tre Monday morning, with the driver feelin fine and confident of the ability of his truc to perform.

The captain should go over the haul wit the drivers, decide what should be a rea sonable number of trips per day on tha particular haul, hold up those inclined to b too speedy, and poke up the sleepy ones, i there were any, giving advice, noting th machines' weak points, and have on han repair parts most likely to be needed, an forestalling undue depreciation.

Acknowledgment.—From *Good Roads for Wisco sin.*

Trophies Awarded for Good Roads

Manitoba Grants Cash Prizes for Best-Dragged Roads

TO stimulate interest in the art and science of road dragging, the Public Works Department of the Province of Manitoba, Canada, last year instituted an annual contest, with two handsome trophies as prizes,—one, a silver cup for the best results from dragging a gravel road, and the other, a shield for the best results obtained on an earth road. The appropriate design on both cup and shield, as can be seen in the accompanying photographs, is a view of the Appian Way at Rome. A copy of the rules and conditions of the contest is herewith appended:

1. The provincial trophies are to be awarded for the best-maintained stretch of road during the whole season in each of the two classes of roads, viz., earth and gravel, in the province.

2. The trophies shall remain in the possession of the municipality in which is located the road adjudged as the winner in each of the two classes, for the period of one year.

3. Any municipality in the province may enter in the competition for either or both trophies.

4. All roads entered in the provincial competition must form part of a local dragging competition district.

5. No section of road entered in the provincial trophy competition shall be less than two miles in length.

6. Every municipality entering the provincial competition must have at least twelve miles of roads entered in its local dragging competition district.

7. Roads entered in the competition must be dragged from May 1 until freeze-up in the fall.

8. Each local dragging competition district shall appoint its own judges to decide the prize-winning sections in gravel and earth classes in their respective districts.

9. The judges in the local dragging competition districts shall make an inspection of the roads in their respective districts during the week preceding September 1, and the roads adjudged to be the best-maintained in these districts at that time shall be eligible for final competition for provincial trophies.

10. The judges in local dragging competition districts shall forward to the Highway Commissioner, Parliament Buildings, Winnipeg, not later than September 7, the names of the successful competitors and the location of the sections of roads adjudged to have been the best-maintained in that district at that time.

11. Judges for the provincial trophies shall make their selection for the awarding of the trophies from the sections of roads thus submitted by the judges of the local dragging competition districts.



THE GRAVEL ROAD TROPHY AWARDED THE MUNICIPALITY OF ELLICE, MANITOBA

12. Judges for the provincial competition shall be appointed by the minister of Public Works.

13. Judging for the provincial trophies shall as near as possible be done between September 10 and 25.

14. The person maintaining the road which has won a provincial trophy shall receive a miniature of such trophy, which shall remain in his sole possession, and he shall also receive a check for the sum of $25; such miniature and check will be in addition to any prize which may be won in a local competition district.

The special entries for these trophies last year were, in the gravel class, twelve from nine municipalities, and in the earth class, six from four municipalities. The judges appointed were J. D. Waugh, Ex-



THE TROPHY FOR THE BEST-MAINTAINED EARTH ROAD IN MANITOBA, WON BY CHARLESWOOD MUNICIPALITY

Mayor of Winnipeg and Commissioner of the Greater Winnipeg Water District, W. F. Tallman, the Street Commissioner of Winnipeg, and A. McGillivray, the Highway Commissioner for the Province of Manitoba. The winner in the gravel class was the municipality Ellice, the dragman on the winning section being William Crichton, of Foxwarren. Special mention was also made of a section of road in the municipality of Wallace, kept by G. S. McAdoo, of Butler, Man. In the earth class the trophy goes to Charleswood municipality for a section of road kept by Joseph LaFleche, of Charleswood, Man.

The policy of offering prizes for road-dragging is not a new one in the province of Manitoba. Previous to the competition for these good roads trophies, the Provincial Government of Manitoba assisted the Manitoba Good Roads Association, which offers cash and jewelry prizes for road-dragging, by a money grant to th Association each yea this grant being abo equal to the cash prize and the Government h not discontinued th policy. In addition, th Provincial Governme thru the Public Work Department makes grant to each of th various municipalities $3.25 per mile of roa maintained by road drag during the season. Th Municipal Council is r quired to report to th Good Roads Departme monthly on printe forms, giving informa tion of the mileage each stretch during th month and the cost the work. One of th inspectors of the Goo Roads Department specially detailed to vis each municipality least twice during eac season and to give i struction to men opera ing the road drags. H also reports to the D partment on the quali of the work and the co dition of the road in general. Each of th engineers has also, as part of his duty, give some attention to any road-draggi going on in his district.

All good workers become better worke if there is some incentive to spur them o The results of the Manitoba experime proved no exception to this rule. The Pu lic Works Department of the Province Manitoba is so well satisfied with the su cess of its road-dragging contest that it going to continue the plan year after yea

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The Construction of Culverts and Small Bridges

Methods Suggested at Kentucky Road School

By Charles D. Snead
Bridge Engineer, State Department of Public Roads, Kentucky

GOOD concrete cannot be made from poor sand, gravel or stone, and these aggregates should be thoroly investigated and tested before use. This is just as important as the test of the cement which goes into the structure. The quality of your concrete will also depend upon the sizes of aggregates used. I have frequently found slabs and stones which would not pass a 3-inch ring being used as aggregate for reinforced concrete culverts and slabs. The fact never occurred to the men putting in the concrete that this size of stone was prohibitive because the stone would not pass thru the spacing of bars and would cause honeycomb, or else voids and pockets might be formed along the steel. For thin reinforced work use stone passing a 1-inch ring; for ordinary slabs stone passing a 1½-inch ring should be used; and for plain concrete stone passing a 2½-inch ring should be employed. The stone or gravel should be uniformly graded in size from coarse to fine, not more than 5 per cent by dry weight, passing a ¼-inch circular screen. Hand stone, when used, should be carefully selected large stones about the maximum size one man can lift, and should be thoroly drenched with water before being placed in the concrete.

A finished structure is judged largely by its appearance. The appearance of a concrete bridge is of great importance, and, if neglected, the structure becomes more of an eyesore as time goes on. Without good forms—forms which will neither bulge nor settle, forms with smooth faces and neat joints, forms true both to grade and alignment—we cannot expect to secure well-appearing bridges and culverts. Patching, plastering, painting and washing structures do not remove the lines and marks of poor form work and usually tend to accentuate the condition.



DOWN-STREAM VIEW OF CONCRETE BRIDGE, HENRY COUNTY, KY., HAVING THREE 26-FOOT SPANS

Construction of Forms

Forms must be constructed water-tight, of matched dressed lumber with tongue and grooved or shiplapped joints. Mismatched, knotty boards, so poor that they are culled

for all other use, should not be employed in form-building. Most unsightly and displeasing surfaces are the natural result of a "penny wise and pound foolish" policy in regard to forms. Forms must be braced against bulging and well supported to prevent settlement. If settlement takes place in the forms during the pouring of the concrete, but one thing should be done, and this should be done immediately: stop the work, take out all of the concrete in the portion affected and throw this concrete away. The forms, after being brought back to their proper position, true both to grade and alignment, should then be repaired and thoroly braced. The concrete removed must not be used again.

Forms should not only be designed to remain rigidly in position during the placing of the concrete, but should also be so constructed that they may be removed with the minimum of damage to the finished structure. Triangular bevel strips should be used in all sharp corners where possible, and the forms should be given not less than two coats of oil or soap before the concrete is placed in them.

Cost of Forms

The question is often asked, how much should forms cost? There is but one accurate way of estimating the cost of forms for any structure, and that is to design the forms, estimate the falsework and bracing required, and from these items calculate the cost of materials and estimate the labor to build them. It has been found that a fair approximation of the cost of forms for the different classes of reinforced concrete superstructures or culverts in state work may be estimated per cubic yard of concrete (if the forms are not to be used the second time) by allowing 100 feet B. M. of lumber per cubic yard and 4 hours' time each for the carpenter and helper for the erection, and for the substructures of slabs or girder bridges, 2½ hours' carpenter's time and 2½ hours' helper's time for the plain concrete. These figures have been based upon actual work done with the ordinary type of labor available. Where the forms are used twice, it has been found that it requires about one-half the time estimated for building to re-erect them.

Hand-Mixed Concrete Generally Poor

After carefully noting the methods of mixing thruout this state, one is convinced that fully 90 per cent of the hand-mixed concrete is carelessly, improperly and poorly done. A summary of the common faults found in the mixing is as follows:

1. Inaccuracy in dividing a bag of cement for more than one batch
2. No attempt to measure accurately the sand, gravel or stone for each batch; or else, improper measurement in ordinary wheelbarrows or by shovels
3. Allowing roots, wood blocks, shavings, leaves, nuts, etc., to accumulate in the sand and stone piles and not removing them before mixing concrete
4. Mixing concrete on boards full of cracks, which allow the mortar to waste
5. Mixing concrete upon the ground or upon the surface of old macadam roads
6. Not having sand dry enough to spread evenly over the board
7. Not wetting the stone or gravel before mixing
8. Mixing the stone, sand and cement together (one placed on top of the other)
9. Too much water in the mixture or water dashed upon the concrete while mixing
10. Not turning the concrete often enough or cutting properly with shovels or hoes, to secure the proper mixture
11. Improper consistency of concrete
12. Allowing concrete to stand too long after mixing before placing, and then retempering the concrete

Hand-Mixed Concrete

Concrete mixed by hand should be mixed on a board sufficiently large to contain two batches of one bag each at one time. The board must be water-tight. The aggregates —sand, stone or gravel—should be accurately measured in boxes or some equally good device. It will be noted that class "A," class "B" and class "C" concrete contain an amount of stone or gravel equal to twice the amount of sand, while class "D" concrete contains 1½ times as much stone as it does sand. Boxes can be made which will measure the sand, and these can be used to measure the stone by using the required number of measures. The following sizes of boxes are required:

Class "A" (1:2:4)—
1 foot 5 inches x 1 foot 5 inches x 1 foot 0 inches
Class "B" (1:2:4)—
1 foot 7 inches x 1 foot 7 inches x 1 foot 0 inches
Class "C" (1:3:6)—
1 foot 8¼ inches x 1 foot 8¼ inches x 1 foot 0 inches
Class "D" (1:2:3)—
1 foot 5 inches x 1 foot 5 inches x 1 foot 0 inches

For hand mixing, spread the sand evenly over the board, the sand being dry enough to be granular. Spread the cement over the sand, add the water and mix into a mortar

which will not run when worked; when deposited, the mortar should flatten out and quake. Spread the mortar evenly over the board, and, having previously wetted the gravel or stone, spread this upon the mortar. Turn with shovels or hoes at least six times until the mortar is thoroly incorporated thruout the mass. Picking up the concrete and redepositing at some other location on the board does not constitute turning or cutting concrete in the true sense.

Water should never be dashed upon concrete while it is being mixed. If it is necessary to add more water, it must be added a little at a time until the desired consistency is obtained. Concrete to be used without reinforcement should flatten out and quake when tapped, but should not flow. The consistency of concrete with reinforcement should be as above, except that it should flow sluggishly under working. No concrete must contain enough water to allow the separation of the aggregates in handling from the board to its final place of deposit.

Machine-Mixed Concrete

Equal care in measuring the aggregates is necessary for machine-mixed concrete and for hand-mixed concrete. The coarse aggregate must be always wetted before combining with the sand and cement. The fine and coarse aggregates as well as the cement may be placed in the drum at once. The drum should revolve between 14 and 20 revolutions per minute. Just sufficient water to secure the proper consistency should be added. The concrete without additional water should be allowed to mix for a period of one minute, and then if it is found that enough water has not been used, more may be added. Concrete should be allowed to mix for a full period of a minute and one-half. The length of mixing should be checked up often by the inspector. It has been my observation that when concrete was required to be mixed for a period of a minute it was often dumped in thirty to forty seconds. The contents of the drum must be entirely removed before dumping in the ingredients for the next batch.

Placing Concrete

The remarks concerning improperly mixed concrete are equally true concerning the placing of concrete. Concrete must be handled quickly from the place of mixing to the forms, and if left for a period of half an hour, it must be thrown away and not be used. Smooth faces and surfaces will not result by merely dumping concrete into good forms. It is necessary to spade the faces and tamp the concrete thoroly. Care must be exercised to see that the concrete flows around the reinforcement. Concrete must be deposited in horizontal layers, or else construction joints, most displeasing to the eye, are formed. Concrete should never be deposited in layers of less than 12 inches and preferably 18 inches in thickness and, if possible, the tops of layers should coincide with the tops of planks in the forms to hide their marks.

Removal of Forms

Failure can result from the removal of forms too quickly from underneath slabs,



AN ATTRACTIVE BRIDGE OVER BARORO RIVER, LA UNION PROVINCE, PHILIPPINE ISLANDS

This bridge is composed of twenty-two 9-meter reinforced concrete girder spans set on reinforced concrete pile caps which are supported by concrete piles. This will be a toll bridge for five years under the Board of Public Works

seams or girders. The side forms of beams and girders should be removed in seven days, and the forms from plain concrete may be removed in two days if the weather is warm, in order that the concrete, yet green, may be rubbed with a wooden block or carborundum brick. If the removal of the side forms is delayed for a much longer period, smooth faces to exposed surfaces cannot be easily secured by napping. Traffic should not be allowed over the structure until a period of at least thirty days has elapsed.

Protection and Curing of Green Concrete

How many concrete spans have you seen properly protected from the direct rays of the sun in hot weather, and how many have you seen adequately protected which were poured during freezing weather? In hot weather, all floors, handrails and troweled surfaces should be kept wet for a period of at least one week. The floors should be covered with dry sand as soon as the concrete has taken its initial set, and the sand should be kept wet. If concrete is not protected from the sun, it will bleach out and crack, much after the manner of mud dried quickly by the intense heat of the sun; however, the cracks will be far smaller. During freezing weather the concrete which has been poured within four days prior to the fall in temperature must be protected by fires, straw, manure or some such means.

Conclusion

The statement is often made that a structure looks solid enough but its appearance and workmanship are not just what they should have been. A good workman is proud of his work, and especially work which is to represent him for ages. Cheap labor, cheap forms, cheap aggregates, and no profits may produce just the structures referred to above, but, I dare say, if the details of construction were followed carefully thru,—that is, the mixing, the placing, the finishing, and, finally, the protection of the concrete,—it would be found most frequently that more has gone wrong and has been temporarily hidden than the poor appearance would betray. Have your work properly designed, and employ the best contractors, allowing them sufficient profit for their work to produce satisfactory results; and remember, when you skimp, you are only cheating and fooling yourself by sacrificing the appearance, the strength and the permanence of your structure.

North Carolina to Aid Counties and Towns in Protection from Forest Fires

THE Forest Division of the North Carolina Geological and Economic Survey has issued a statement for the benefit of county and town officials thruout the state to the effect that during the next two years it will be possible for them to employ forest wardens for the prevention of forest fires. The amount of money appropriated for this work is not large, and in order to make it go as far as possible in reducing the large annual loss from forest fires, the Division will adopt a policy whereby wardens will be appointed in those counties or townships which, in the judgment of the Chief Forester, most need their services. Wardens generally will be appointed in those counties or townships where coöperation can be secured either thru the county authorities or from associated or individual landowners. The coöperating party will be expected to recommend the names of one or more persons suitable for a forest warden, who is to be appointed by the State Forester.

Coöperation with the state may be thru contribution made directly to the Survey to be spent by it for forest fire protection in a way to be agreed upon by the coöperating parties, or by employing or paying one or more forest wardens or patrolmen who shall be on duty during dry and dangerous weather, and whose work shall be subject to the inspection and approval of the State Forester.

Under these plans, it is expected that the towns and counties thruout the state will be far better protected as regards their native resources of lumber than they have ever been before. This is brought to the attention of other county and township officials in the hope that they may be able to coöperate in effort to secure similar, or, if possible, better services from their state forestry departments.

County Highway Books and Bookkeeping

By Gordon F. Daggett
Engineer of Surveys, Wisconsin Highway Commission

A COST accounting system is based on certain fundamental principles, and to be successful must be reliable, simple, immediate, flexible and relatively inexpensive. It must include a proper debit or credit entry of every financial transaction.

Reliability is of paramount importance. If the data collected are not reliable, all dependent records, and of course the final results, will be faulty. Accuracy is desirable, but this need not be carried beyond the practical limits adopted for measuring the units of materials expended and the units of work accomplished. If simplicity be not maintained, the purpose of the system will be defeated. Involved and complex forms are confusing to the recording officials, difficult to compile for study and analysis, and apt to be inaccurate and a useless expense. To be effective, the cost records must be susceptible of immediate analysis and must reach the officials responsible for the economic progress of the work in time to be of use. If a week or ten days must elapse before wasteful methods of incompetency are discovered, the information is past history and it may be too late to try other methods which might rectify the detrimental conditions. Flexibility is very desirable. The system must be elastic enough to provide for the recording of all classes of work irrespective of the size of the project, and for the addition of new accounts without any material change in the prescribed forms. Finally, the system must be relatively inexpensive. The cost of determining cost must be reduced to a minimum. If the expense of obtaining cost records to point out the way to efficiency is not much below the saving effected, the records have no just claim to a place in any plan of management.

A good contractor maintains cost records on every job. These cost records mean more to him than merely a record of the financial status of the job, because they furnish a basis for future comparisons and estimates. Hence, state and county employes charged with the responsibility of carrying on thousands of dollars' worth of work must keep cost accounts on our day labor work.

The one essential in cost accounting is to have a good, simple system of accounts and then see that these are properly kept. The material serviceability of cost accounts depends entirely upon the person in charge.

The County Highway Commissioner often loses sight of the fact that his work consists of something other than field work, being prone to think that construction is the only important feature. In this supposition he is wrong, because along with construction work must be carried a series of cost accounts which can be referred to in the future as a record of the work performed; otherwise, results obtained on work without accurate costs are of little value. Careful and accurate cost accounting must go hand in hand with construction work.

An Analysis of Cost

The term "cost" as generally interpreted is the summation of the expenditures, expressed in terms of money, involved in acquiring or producing a utility or performing a service. The cost of every unit of product, whether it be a square yard of road surface maintained, or a cubic yard of concrete, is composed of four basic elements of expense, namely: (1) cost of labor; (2) cost of materials; (3) cost of service of plant and equipment; (4) cost of general expense or overhead.

Labor costs may be divided into two classes: (1) the direct labor cost, and (2) the indirect labor cost. All labor properly chargeable against the project, which can be designated as directly expended upon it, is deemed direct labor. For instance, the cost of men using picks and shovels on excavation work, who are directly expending their efforts on that piece of work, is a direct labor charge. All labor chargeable against the project but not directly expended on the project is called indirect labor. For instance, a superintendent in charge of a road job is not directly expending labor on excavation, but is en-

gaged in directing the prosecution of all kinds of work, and his expense is an indirect labor charge chargeable pro rata against the production of all units he may be supervising.

The elements of cost of materials, cost of service of plant and equipment, and the cost of general expense, or overhead, are so worded as to be self-explanatory.

Classification of Accounts

The general classification of accounts on road construction work should be about as follows:

1. Earth work, including: (a) cost of new right-of-way; (b) clearing and grubbing; (c) earth work; (d) tile drain; (e) guard rail; (f) extra ditching, etc.
2. Culverts, including all materials and labor in connection with the construction thereof.
3. Materials to road, including: cost of materials f.o.b. cars at quarry or gravel pit; freight and demurrage; cost of material in quarry, or pits; cost of getting material to road from quarry, pit or cars; and cost of moving or setting up any machinery in connection with this item, if such is properly chargeable to the road.
4. Placing surfacing. This item is self-explanatory, but care must be taken to include the cost of supplies necessary for the maintenance of the machinery, and any other item that has to do with the placing of the surfacing on the road.
5. Bridges, including the cost of all materials, their delivery, mixing and placing, and any other items that are properly chargeable to the bridge account.
6. Engineering and supervision.
7. Machinery.
8. Administration.

These accounts may be subdivided into as many detailed parts as are required to facilitate the derivation of costs. The cost accounting system designed by the Wisconsin State Highway Commission cares for all of these accounts, with the exception of the items of machinery, engineering and supervision, and administration. Forms are being designed at the present time to care for these accounts.

Most of the aforementioned accounts are self-explanatory, but the last three need explanation.

Engineering and supervision account.—To engineering and supervision should be charged all expenditures for surveys, plans, specifications, estimates, tests, and all engineering inspection and supervision in the nature of oversight required to secure proper execution of the work. Such expenditures can be charged directly to individual projects.

Machinery account.—All charges for depreciation, repairs, rental, etc., on machinery are chargeable to this account. To arrive at a fair and equitable daily charge for rental of machinery, some allowance must be made for time spent in idleness because on these days the fixed charges still are continuing and certain supplies are necessary even tho the machine be not in operation.

Equipment is consumed in production just as truly as materials. This loss is called depreciation. All equipment progresses steadily toward the scrap-pile starting the date it is purchased; and while its progress may be delayed, it cannot be prevented by repairs. There is no doubt in the minds of cost accountants that depreciation of plant and equipment should be included as a charge against operation.

Administration account.—Administration costs include such expenditures as salaries and expenses of executive officers, legal services, maintenance of office, investigations, experiments, clerical staff and miscellaneous fixed charges.

These expenditures cannot be allocated directly to any particular class of work or to individual projects, but must be prorated over all work performed during the season.

There are certain records required by the State Highway Commission to be kept on State Aid and Federal Aid work in Wisconsin, referring for the present to day labor construction. A brief review of the forms in use on state work will not be amiss at this point.

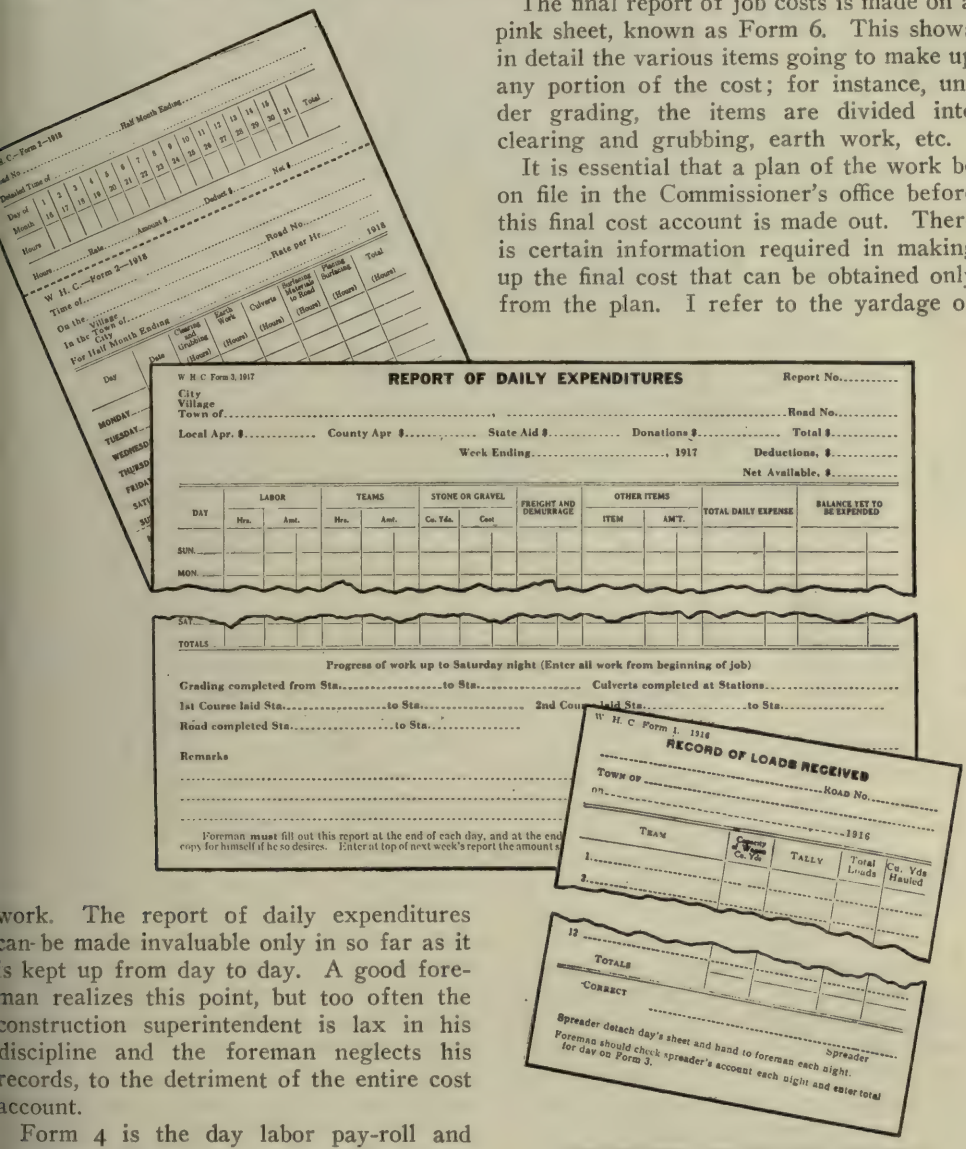
The first records of importance on any job are the time record and the record of loads of material received. The time of each individual employe must be kept in hours, in order that proper segregation and charge against the specific activities may be made. The time book should be kept by the foreman, and each night proper entries and distribution of the time of his force should be made, in order that the day's operating cost may be definitely determined. The record of loads should be kept by the spreader-man and handed to the foreman each night. Another important record is the report of daily expenditures, which not only shows the funds available for the proj

ct, but is so designed that the proper harge for each activity may be noted for ach day represented. The operating cost or the day can then be determined, and the oreman can ascertain just what working alance of funds is available for future

a part of the cost records. Discretion should be used in notifying foremen of the amount available for construction, because it is good policy to reserve a small sum to care for miscellaneous bills. In this way a deficit at the end of the job can be avoided.

The final report of job costs is made on a pink sheet, known as Form 6. This shows in detail the various items going to make up any portion of the cost; for instance, under grading, the items are divided into clearing and grubbing, earth work, etc.

It is essential that a plan of the work be on file in the Commissioner's office before this final cost account is made out. There is certain information required in making up the final cost that can be obtained only from the plan. I refer to the yardage of



SUGGESTED FORMS FOR COUNTY HIGHWAY DEPARTMENTS

work. The report of daily expenditures can be made invaluable only in so far as it is kept up from day to day. A good foreman realizes this point, but too often the construction superintendent is lax in his discipline and the foreman neglects his records, to the detriment of the entire cost account.

Form 4 is the day labor pay-roll and summary. This is a pay-roll made up from the time sheets, showing a proper distribution of the labor costs of the work.

There are miscellaneous bills, such as supply and repair bills, that enter into the cost of every job. These bills should be collected every week or two weeks by the County Highway Commissioner and made

material to be moved in grading work and the concrete in drainage structures. Unit costs can be obtained by dividing the total cost of all work done by the amount of material handled.

Office Records.—The average Wisconsin

county will have from six to fifteen jobs in a season. This number requires some additional accounting work over and above the project or job accounts. The amount of money involved is of such magnitude that a "fund" or "controlling" account should be maintained. This is simply a debit and credit record of the total funds available for construction in the county. The Commissioner may determine from the controlling account at any time the total disbursements on all construction work in the county without referring to the separate job accounts. This system is followed in the State Department and has become invaluable as a means of quick and ready reference for balances. The number of subsidiary accounts is immaterial, but in striking a trial balance each subsidiary account must of necessity be balanced, and the total of balances must correspond to the fund account balance.

The project or job accounts are subsidiary to the "fund" account. Each account must be maintained separately, and a trial balance can be easily drawn on the first of every month. The project account ledger (Form 5) must be kept in the office. The fundamental idea of this ledger is to serve as a permanent record of all financial transactions that take place on the work. Every transaction of this nature, no matter how trivial, must be recorded. The ledger not only shows information relative to the disbursement order, but shows a proper distribution of the items in their respective classification.

We have been dealing thus far with construction accounts, but there is another set of accounts which is of equal importance, namely, "maintenance accounts."

The accounts necessary for maintenance records correspond to those for construction, with the possible exception that individual accounts may differ somewhat in type. Maintenance accounts should be handled under two general headings, namely, patrol accounts and gang accounts. Each county is required by the State Highway Commission to carry on its maintenance work by sections. Different sections will require different amounts of money for their maintenance during the season. Separate accounts should be opened against ea patrol section, and in order to handle the accounts properly, the funds available f each section should be determined at t beginning of the maintenance seaso Therefore, the Commissioner, together wi the County State Road and Bridge Commi tee, should apportion a definite amount money to each individual patrol sectio thereby starting a true debit and cred account. There will then be as many su sidiary patrol accounts under the "co trolling account" as there are sections the system. It is admitted that this will r quire additional bookkeeping, but from t experience of one year in the handling maintenance accounts, the State Highwa Commission feels that this extra work fully justified by the results obtained. Gar maintenance accounts will vary in numbe according to the number of gangs operatir in the county. The ledger in which th record is to be kept has been designed show not only the section in which this gar maintenance work has been performed, b to show the location by mile.

Office records to be of service must kept up to date. This involves a mass detail work which the Commissioner cann and should not attend to. He is an execu tive officer, and as such cannot afford devote his time to clerical work that cheaper man can perform. An office assis tant is recommended in every commi sioner's office. This assistant should pr ferably be a bookkeeper who is acquainte with the fundamental principles of accoun ing. It is realized that a large percentag of the counties do not have an office assis tant for the County Highway Commissione but the State Highway Commission fee that the time has come when such an assis tant is not only needed but essential.

In conclusion, let us remember that simple system of accounting carried out i every detail will furnish true costs that wi be of service in estimating future work This one feature is the basis of all account

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Editorial Note.—The author will be pleased forward to any readers of The American City wh are interested copies of any or all of the forms me tioned in this article, which is prepared from h paper read at the Eighth Annual Road School of th Wisconsin Highway Commission.

Water In Road-Building

By Ira O. Baker
Professor, College of Engineering, Urbana, Ill.

THE more important a subject, the more is known about it, and hence the more difficult it is to say anything new, or to say old things in a new way. This is particularly true of good drainage. Water is an important ingredient in constructing a concrete road or in laying a concrete foundation for a brick pavement. Again, water is a factor in curing or hardening the concrete either for the foundation or for the wearing surface. The procuring of water for mixing and curing concrete, particularly in country road-building, often requires a considerable haul or long-distance pumping, or both; and the expense of doing either or both of these is an important item in the total cost.



A CONCRETE CULVERT, CHELMSFORD, MASS.

Again, under certain other conditions, water is a saving power on a road. As a rule, a road on pure sand is at its best when it is wet, and is almost impassable when it is dry. Therefore, in building a road on pure or nearly pure sand, every effort should be made to secure or preserve shrubbery and trees on the side of the road so as to shade the trackway as much as possible and keep it from drying out.

Except as stated, water is the salvation of all other roads by its absence. Drainage of both the surface and the foundation is vital for an earth road, and drainage of the foundation is important for either a brick or a concrete wearing surface.

To many persons, the adequate drainage of the foundation of roads seems a very simple matter; but there are some facts that seem to show that the drainage of the foundation of a road is seldom satisfactorily accomplished.

It is acknowledged by all that many times longitudinal cracks appear in both brick and concrete roads and pavements. Such cracks seldom or never appear in pavements in the South, which seems to prove that they are in some way due to frost action; but cold weather has no harmful effect except in the presence of water. That frost is harmless where there is no moisture is shown on a large scale in the semi-arid regions west of the Mississippi River. The ground there is normally so dry that during the winter, when it is frozen, cracks half an inch or more wide form, owing to the drying and consequent contraction of the soil, which shows that there is no expansion by the freezing of water in the soil; and therefore in that region there is no heaving or disturbance by frost.

The possibility of longitudinal cracks in brick and concrete roads is so great that a prominent road engineer has proposed to lay a sub-foundation of hollow clay fireproofing upon which to build the usual concrete road or a concrete foundation for a brick pavement. The purpose of the hollow clay tile is to secure such perfect drainage that there will not be sufficient water present to permit heaving or other disturbance

due to freezing. Let us consider briefly the usual method of draining the foundation of a road.

Drainage

A perfectly drained road will have three systems of drainage, each of which must receive special attention if the best results are to be obtained. These three systems are underdrainage, side ditches, and surface drainage.

For lack of time, only underdrainage can be considered here. However, the drainage by side ditches is comparatively simple. Furthermore, the surface drainage of a road, particularly an earth road, is a matter of keeping the surface properly crowned and reasonably smooth, and this is entirely a matter of maintenance.

Any soil in which the standing water in the ground comes at any season of the year within 3 or 4 feet of the surface will be benefited by underdrainage; that is, if the soil does not have a natural underdrainage, it will be improved for road purposes by artificial subsurface drainage. It is the universal observation that roads in low places which are thoroly underdrained, dry out sooner than undrained roads on high land; and further, that underdrained roads never get as bad as do those not so drained.

The Object

The opinion is quite general that the sole object of underdrainage is to remove the surface water, but this is only a small part of the advantage of the underdrainage of roads. There are three distinct objects to be gained by the artificial underdrainage of a wagon road:

1. The most important object is to lower the water level in the soil. If the road has only an earth surface, the action of the sun and the wind will finally dry the surface of the road; but if the foundation is wet, the road will be soft and spongy, the wheels will make ruts, and the horses' feet will wear depressions between the ruts. The first shower will fill these depressions with water, and the road will soon be a mass of mud. No road with a hard surface can be maintained without a good foundation, and an undrained soil is a poor foundation, while a dry subsoil can support almost any load.

2. A second object of underdrainage is to dry the ground quickly after a freeze. When the frost comes out of the ground in spring, the thawing is quite as much from the bottom as from the top. If the land is underdrained, the water when released by thawing from below will be immediately carried away. This is particularly important in an earth road, since the foundation will then remain solid and the road itself will not be cut up. Underdrainage will usually prevent the "bottom dropping out" of an earth road when the frost goes out of the ground. If the road has a hard surface, as, for example, brick or concrete, the wet subsoil at the edges of the roadway may freeze and lift the plate and crack it longitudinally near the center; or perhaps the ground may thaw at the edges, leaving a frozen core under the center of the plate, and traffic may depress the edges of the plate and crack it longitudinally.

3. A third, and sometimes a very important object of subdrainage is to remove what may be called the underflow. In some places where the ground is comparatively dry when it freezes in the fall, it will be very wet in the spring when the frost comes out—surprisingly so considering the dryness before freezing. The explanation is that, after the ground freezes, water rises slowly in the soil by the hydrostatic pressure of water in higher places; and if it is not drawn off by underdrainage it saturates the subsoil and rises as the frost goes out.

The Tile

The best and cheapest method of securing underdrainage is to lay a line of ordinary farm tile three or four feet deep on one or both sides of the roadway.

For most soils, it is probably sufficient to lay a line of tile under one of the side ditches; but with an extremely retentive soil, it may be necessary to lay tile under both side ditches. In case of doubt as to whether or not the second line of tile is needed, and if demands for economy are severe, put in one line and watch the results. If both sides of the road are equally good, another tile drain is not needed. In making these observations care should be taken not to overlook any of the contingent factors, as, for example, the difference in the effect of the sun upon the south or north sides of the road, the effect of shade or of seepage water, and the transverse slopes of the surface of the road. However, in case of grave doubt whether to tile one or both

ides, it is often wise to lay a line on both ides, since drainage is a most important actor in road-building, and the cost of a ne of tile is comparatively small.

Some writers on roads recommend a line f tile under the middle of the traveled por- on. With the same depth of digging, a tile nder the side ditch is more effective than ne under the center of the road. Further, f the tile is under the center, there is lia- ility of the settling of the soil in the rench, which will make a depression and robably a mud-hole; and if the tile be- omes stopped, it is expensive to dig it up, nd doing so interferes with traffic. Finally, f the road is ever to have a hard sur- ace, the disadvantage of having the tile nder the center of the road is increased.

Some writers advocate the use of a line f tile near the surface, on each side of the rackway. The object of placing the tile n this position is to secure a rapid drain- ge of the surface; but very little, if any, vater from the surface will ever reach a le so placed, since the road surface when vet is puddled by the traffic, which pre- ents the water percolating thru the soil. t is certain that in clay or loam the drain- ge thus obtained is of no practical value. Many farmers have tried to drain their arnyards by laying tile near the surface, ut always without appreciable effect. The eeper the tile the better the drainage.

The rapid surface drainage sought by utting a tile or its equivalent near the sur- ace can be secured only by giving the sur- ace of the road a proper crown and keep- ng it free from ruts and holes.

While a line of tile on one side of the road is usually sufficient, there is often a great difference as to the side on which it should be laid. If one side of the road is higher than the other, the tile should be on the high side to intercept the ground water flowing down the slope under the surface. Sometimes a piece of road is wet because of a spring in the vicinity, or perhaps the road is muddy because of a stratum which brings the water to the road from higher ground; in either case, the source of supply should be tapped with a line of tile instead of trying to improve the road by piling up earth.

It is not worth while to attempt any exact mathematical analysis to determine the size of the tile, since there are too many variable and unknown factors. Usually there is local experience that is more valuable than any theoretical determination. It is generally considered that the tile should be at least 4 or 5 inches in diameter.

In some localities to secure drainage of the subgrade under a proposed hard-surfaced road, it seems to be the custom to excavate the subgrade under the road plate to the form of a very flat V, and fill the V with broken stone. The author is strongly of the opinion that this V drain is not worth its cost.

Sometimes shallow trenches are dug from the edge of the road plate diagonally to the side ditch, and then filled with broken stone. The author believes that such drains cannot long remain efficient, since they will become clogged with the wash from the surface of the road sides.

The Public as Road Inspectors

One of the things the public should take an nterest in is the preservation of roads. Many tates have laws to prevent the destruction of oads by improper use of them. Instances of uch injurious use should be reported to the roper officials. Nobody hesitates to report at- empts to break in and steal on his neighbor's roperty, or, in most cases, to offer physical nterference with the marauders. The man vho knocks a good road to pieces with a trac- ion engine or damages it by driving heavy oads on narrow tires on wet days is damaging ublic property unnecessarily and should be eld to account just as much as housebreakers. The state and county officials cannot be every- vhere all the time; they have to rely on the ublic spirit of private individuals to keep them nformed of transgressions of the kind named.

The public can also render great help by reporting lax work by the small gangs sent out to make repairs, by giving prompt information concerning defective road conditions as they develop, and informing the authorities of the location of good road-building materials. Road-building is not such a simple matter as it seems to many persons who have not taken an active part in it, and probably a good many ill-advised suggestions concerning road work will be made by individuals thru ignorance of all the facts relating to it, but the right kind of road officials are glad to have such suggestions because they afford an opportunity of showing to interested persons what is really involved in building and maintaining good roads.

Four Transportation Allies

Electric Railway—Highway—Steam Railway—Waterway



Having seen our railways badly overtaxed and unable to bear their great burden during the war, we have learned to develop motor express service and to make greater use of our canals and rivers. These means of freight transportation are closely allied to our steam railway system and must be developed. The railways cannot handle the traffic which flows to them, therefore as much as possible must be diverted to highways and waterways. To state, county and town officials falls the duty of pushing highway reconstruction and maintenance to care for this traffic and to absorb our present excess of labor.

Are Hard-Surfaced Roads a Luxury or a Necessity?

By Minnie J. Grinstead

State Representative, 123d District, Kansas

To a progressive rural community, a hard-surfaced road would soon cease to be considered a luxury and would become a necessity. A progressive community wants to get somewhere, and hard-surfaced roads will help to get people to church, to schoolhouse, to town, to the neighbors, etc.

Kentucky has enough rock to hard-surface many miles of road if the people see the necessity of doing it. The process of road-building is slow, and the spirit of the people must be awakened before they will realize the necessity for hard roads. The progressive community owns cars, has good, well-furnished homes, good barns and educated families, and the people of such a community desire to mingle with their fellows, hence the need for hard-surfaced roads. Hard-surfaced roads add to the general welfare of the progressive community. They are a necessity to the women of t community, in order that they may have quick market for their produce, and an ea way to mingle socially with their wom friends. The most God-forsaken people know are the lonely country women who ha no social life. Men get out more and ma friends without the formality of introductio but women are more lonely and retiring. they are kept at home because of family car their women friends can visit them if the co munity has hard-surfaced roads. Yes, th cost good money, but the cheapest is not a ways the best. Hard-surfaced roads are stron and once made, always made, tho they will n keep themselves. France could not have he back the war dogs of Germany if she had n had hard-surfaced roads.

What Good Roads Mean

More Ready Cash for the Farmer—Cheaper Produce to the Consumer—Decreased Depreciation of Motor Trucks and Saving in Gasoline

A GOOD road means easy communication between business centers, so that the ratio of short-haul to long-haul tonnage will increase. The greater part of farm produce and of manufactured goods is well is consumed within the range of the short haul. This means prosperity and advancement for the inland town or small center of population, with its creamery, store, school, church, community hall and other local interests. The producer who lives on a good road is less dependent upon a transportation company. Back districts can move forward the front, as the good road is a great acquaintance-maker, and trade and very good thing grows on better acquaintanceship.

There is no economy in narrow roads. Traffic follows good roads. The tonnage soon increases beyond the capacity of a narrow pavement to carry it, with the result that the expense of maintaining macadam or gravel shoulders exceeds in a very short time what it would cost for a wider slab.

Not only does existing traffic shift to paved roads, but what was once termed a theory has in practice proved to be a fact: the time saved in marketing on concrete roads results in greater production on farms and truck gardens, since more time is available for cultivating a larger acreage or for cultivating the same acreage more intensively. This adds to the tonnage which the roads must carry, and also to the profits of those who enjoy their time-saving advantages.

During the last year, what are known as return loads bureaus have been developed. In plainer terms, perhaps, that idea means that it is wasteful in time, fuel and labor to make a return trip with an empty truck, where loads may be hauled both ways. The idea grew out of the need for relieving the congestion of freight on railways by diverting short-haul tonnage to the highways, and also in order to prevent useless consumption of gasoline. Concrete and other hard-surfaced highways, which are dependable under all conditions of weather in sustaining greater weight and speedier movement, at the same time effect a marked saving in the consumption of gasoline for fuel in creating power.

Since loads both ways means the need of roads both ways, it follows that wider pavements are needed everywhere to afford an outlet for enlarged traffic, with an ultimate saving to taxpayers. Double-track highways are now as essential as double-track railways.

The marketing of eggs, vegetables, fruit and other farm products continues to shift around from town to the farmer's gate with each new improved highway. This shift in marketing, with the result that cash comes into the farm home every day whereas formerly the produce had to be taken to market once or twice a week, is due to the fact that permanent improved highways permit the consumer in the city to go to the producer in the country and make the bargains first-hand, without waiting for the producer to pull thru mud and rough roads to reach the consumer.

The U. S. Department of Agriculture, thru its Bureau of Markets, has offered its coöperation to the operators of motor express lines in establishing a system of rural transportation on regular schedule, with the view of reducing the cost of handling farm produce and farm supplies en route between buyer and seller.

The advantages which accrue to any county having its own road-building plant and equipment, properly used and cared for, are more manifest every year.

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Good Roads in France and the United State

By Luther R. Tillotson
Formerly Captain, Co. A, 110th Engineers, U. S. A.

THE two things, I believe, which most impressed us in France were the palaces of Paris and the good roads. The great stone and brick palaces of Paris are wonderful; those at Versailles wrecked the Empire of France; the good roads to Verdun saved the Republic. We may thus take it that the palaces represent the old decadent Imperial Government, and the good roads the Republic.

The French people say that the republican form of government permitted them to save France, for it is the most flexible form, giving everybody an opportunity to be heard, and thereby arousing the people. The people once aroused, the authorities were able to carry the war to a successful conclusion. Without good highways for traffic, the Republic would have been overwhelmed. Over these arteries poured the great cannon trains and the huge armies with a dispatch which poor roads would not have permitted. Our own great Republic has before it the French example.

The French have three classes of highways. The first class are fine roads for heavy traffic, the second class are narrower, and the third are trails or by-ways. Any one of these types would be to us a fine road, as they are substantially built of water-bound macadam, usually starting with a Telford base. These roads form a vast network, reaching every place. Some of the old roads are very deep and were started in the time of the Romans. They are mostly the result of a long period of cheap and hard hand labor.

We saw some road rollers at work, but they were apparently of recent introduction, being brand-new, no doubt on account of the war's using up so much of the labor. Along the side of the road every little way is a pile of crushed rock for road repairs. Each section has a man or men assigned to keep up the maintenance. The American soldiers did not treat this ro repair material with the respect shown by t French; they were constantly wanting to use for concrete and other building purposes.

The French Build for Permanence

The French do everything for permanenc even their railroads they would build with su stantial head-walls and culverts in places whi we thought it unnecessary when the road mu be build in haste. Where we were buildi for the French they gave us concrete pipe a insisted on large and massive dry rubble taining and head-walls. In making their roa they usually put in a good substantial ba of large stone, spalled off with a hamm which the boys called a "golf stick," from little head. They added metal and surfacir and on this they would put a little damp ear taken from the roadside. As it was alwa damp in that country, a good water-bound su face could be obtained in this manner. It ways seemed to rain. The first three wee we were there it was dry weather, and t French said it was a drouth, but our experien seemed to prove that it was the finest kind weather.

We marched many nights down the gre road to Verdun. It is an enormous, wide hig way, on which moved the great caravan goi ever forward to supply the troops which sav France before Verdun. The French mai tained a great truck train which could acco modate a whole army, and such a road as t permitted the quick movement of large bod of troops instead of the usual slow marc As an aid to their railroad system, these go roads were obviously traffic arteries of essential nature.

From a paper read before the Good Roads C vention at Topeka, Kans.



MOTOR TRUCKS AND TRACTORS SUCH AS THESE OWNED BY ROBERTSON COUNTY, TENN ARE AIDING HUNDREDS OF HIGHWAY DEPARTMENTS TO PUT THE ROADS OF THE UNITED STATES IN FIRST-CLASS CONDITION

The Village Community School

By W. S. Deffenbaugh
U. S. Bureau of Education

THAT the village has an important part to play in the life of the nation is evident from the fact that there are in the United States 11,784 municipal corporations of less than 2,500 population, representing 8.8 per cent of the population. In addition, there are many unincorporated villages, particularly in New England, where the township government serves the needs of the villages within the town. Tho the village villages represent only 8.8 per cent of the population of the country, practically every person living in rural communities comes within the sphere of influence of one or more villages.

Types of Villages

No general definition can be formulated for the American village. What is called a village in one section of the country is called a boro, town or even city in another section. In general, any such place of less than 2,500 population may be classed as a village. Tho generalization regarding village life is practically impossible, small municipal corporations may, however, be divided into types, as the mining village, the manufacturing village, the suburban village, the agricultural village, and a combination of two or more of these types.

The mining village is often a community within itself, having but little contact with the surrounding country. The same may be said of most of the purely manufacturing villages. The suburban village may usually be classed as a part of the near-by city.

Villages located in agricultural regions are more intimately related to the surrounding country than are those of the other types, and have greater possibilities as centers for community life. They are the trading points for practically all the farmers of the neighborhood. Scarcely a week passes in which every farmer in the community does not go to the village to trade at the store, to have some farm implement repaired, to have his horses shod, to have his automobile repaired, to deposit money in the bank, or to attend a lodge meeting. The agricultural village is thus the business center for the farmers of the community.

Many persons in the neighborhood of the village attend one of the village churches. Tho there are still many churches in the open country, the tendency, as pointed out by Dr. Vogt in his "Rural Sociology," is to



A CHILDREN'S COMMUNITY GARDEN IN A MINING TOWN



Courtesy Kirwan Studio, Glenwood Springs, Colo.

A COMMUNITY SCHOOL GARDEN IN AN AGRICULTURAL DISTRICT

make the agricultural village the church center.

The Village a Center of Life for the Countryside

Many villages are centers for amusement and recreation. In the larger villages there is the picture show, which draws its patronage not only from within the corporate limits of the village but from the entire community. There is the village baseball team, made up of the young men of the village and the community. On Saturday afternoons and holidays the young folk on the farm naturally seek their entertainment in the village.

In brief, many of the villages in the United States, particularly those in agricultural regions, are the centers of life for the entire countryside—business, church, or recreational—but seldom is the village the school center for the community. Practical every-day business life centers in the village, while school life, which should be related to every-day life, does not. It is not unusual to find as many as four or five, and in some of the more densely populated sections of the country eight or nine, one-room schools within a radius of a few miles of a village. In one state 41 per cent of the villages have four or more one-room schools within a radius of two and one-half miles. This is clearly a serious waste.

The one-room school does not and can not minister fully to the needs of the entire community, since a community as a rule is larger than the district served by this kind of school. If the village school is only for the children within the corporate limits, does not serve the community of which is a part. If all the schools of a communi were consolidated at the center of ever day business life, the children of the enti neighborhood, village children and count children, would have better educational a vantages. Their vision would becon broader and all would feel that they belo to the same community with the same i terests.

Before there can be a better organizatio of country life, the villager and the countr man must coöperate. Neither can sh himself off from the other. The villag must become a part of the community it will become decadent. It must serve a work with the community upon which i prosperity depends. The lack of coöper tion, however, cannot be attributed entire to the villages.

The farmer and the villager have in t many instances not thought together. T coöperate, they must confer and exchan ideas. One school serving as a communi center would help bring about communi thinking and community coöperation—th is, if there be developed the type of scho which meets the needs of the entire con munity, and if the school be made the ce ter of all community activities of a recre tional, social and educational nature.

The Functions of the Consolidated Schoo

The community consolidated school at near the village should be the library cente acting as a branch of the county library, there be one. If the schools of a commu

nity are not consolidated at its natural center, it is almost impossible to have library facilities. If there are three or four schools serving a community where one would be sufficient, there may be as many small ineffective libraries as there are schools. The chances are that there would be no library at all. If the library is located at the business center of the community in a school serving as a community center, the library would be easy of access to the people of the community.

To serve the entire community, the village community school must have a building suitable for community meetings. There should be an auditorium, a gymnasium, an agricultural laboratory and workrooms. The school grounds should be extensive, affording room for play, gardening, agriculture, demonstration plots, flowers, shrubbery and trees. The schools in mining and manufacturing villages would serve the community much better if they, too, were to have school buildings suitable for all community purposes, and large school grounds for play and for gardening.

The possibilities of the village community school course of study are many. Agriculture may be taught in a practical way. Grounds suitable for demonstration purposes are obtainable in the village or near it. Boys living on the farms may by means of home projects apply the principles of agriculture learned in the classroom and on the school ground demonstration plot. Boys and girls living in the villages may have backyard and vacant-lot gardens under the supervision of the teachers. If there be a high school department, the teacher of agriculture should be employed for the entire year, so that he may supervise home projects, including home gardening, during the summer months.

The United States School Garden Army has demonstrated the possibilities of gardening by village school children under the supervision of teachers. Thousands of unsightly back-yards and vacant lots in villages have been made attractive and productive because the schools have begun to direct home gardening. The village school offers greater opportunities for gardening than does the large city, as nearly every village home has a large back-yard, and there are usually dozens of vacant lots. It is true that in many mining and manufacturing villages there is but little ground available for gardening, but if there are no back-yards or vacant lots within the village suitable for gardening it is usually possible to secure ground near the village for gardening purposes. Mine owners and manufacturing corporations, as a rule, will donate grounds rent free for gardening and even employ someone to supervise the work of the children. Home gardening should, however, be under the direction of the schools, so that it may be made educative in every way possible. Unless the work is directed by the schools, many correlations of gardening with other subjects, such as arithmetic, language, drawing, cooking, manual training, and nature study, will be neglected.

Before many village schools can develop their possibilities, before they can become community schools, the present plan of independent village schools must be abandoned and a town or county system substituted, thus making it possible for school boards to consolidate the schools of a community at or near its business center.

In most sections of the country the county unit of school administration will best serve the needs of the several communities in the county. If the township is the unit of school administration, many a homogeneous community would find part of itself in one township and part in another, the township boundary lines having no relation to the boundaries of the communities. By organizing with the county as the unit of school administration, it is clear that fewer natural communities would be broken up and a great national spirit would be engendered.

The County Library: An Agency to Promot General Reading

By L. R. Wilson
Director, Bureau of Extension, University of North Carolina

HOW to put every man, woman and child in the countryside to reading books that inform and instruct has been a matter of serious and general concern in the United States since 1900.

In the main, four agencies have been developed and employed in the attempt to make this nation a reading and therefore an intelligent nation: (1) the municipal library, or a library in every village, as in the case of thickly populated Massachusetts; (2) the school library, such as that to be found in 3,500 North Carolina schools, with a total of from 350,000 to 500,000 books in the hands of the school children and their parents; (3) the traveling library, operated by a central library commission, and going into every rural community which shows sufficient interest to apply for service, the best example of which is to be found in Wisconsin; and (4) the coun library, established, supported and admini tered by the county, with branches a parcels post service in every section, which California furnishes the most su cessful type.

Of these four agencies, the last me tioned is least understood, and is describ here for the consideration of those who a interested in the development of a citize ship of readers.

The three predominant characteristi of the county library are:

(1) It serves the citizenship of an e tire county rather than of a town or city.

(2) It is supported by a direct t (usually not less than 1¼ cents nor mo than 5 cents on the $100) on the total a sessed property of the county, or an appr priation is made by the county commissio



THE REFERENCE ROOM OF THE GREENSBORO, N. C., LIBRARY, WHICH IS OPEN FREE T RESIDENTS OF GUILFORD COUNTY

rs to a library already stablished by a town ithin it, in return for hich books are made vailable to town and ounty citizens alike.

(3) It is adminis-ered by a special li-rary board which may eceive lands, build-ngs, gifts, books, etc., or the use of the li-rary, choose the li-rarian and assistants, etermine the number nd locations of branch ibraries or loan tations thruout the ounty, or contract with library already in the ounty for services to he entire citizenship.



A BRANCH OF THE GREENSBORO, N. C., LIBRARY IN THE POST OFFICE AT JAMESTOWN

The Advantages Are Distinctive

That a strong cen-ralized library thus rovided for affords its patrons distinctive dvantages is at once apparent. These are:

(1) It has financial support sufficient o provide books of a varying character and n sufficient quantity to meet the require-nents of all classes of citizens.

(2) It can establish a unified system of ervice to isolated settlements, schools and illages, thereby reaching at regular inter-als every section of the county. A book vagon or automobile can be run on a regu-ar fortnightly or monthly schedule, and an serve every local station.

(3) It can employ an efficient librarian nd assistants in sufficient number to ad-minister the work effectively.

(4) It lends itself to the uses of other ounty organizations, such as the board of ealth and board of education.

(5) It promotes unity of interest and coöperation in all undertakings having as heir object the betterment of the county.

County Work Begun in North Carolina

A beginning has been made in North Carolina in the employment of the county system in modified form as indicated in the exceedingly interesting reports below. This beginning is so suggestive and so worthy of study and development that it is given below in detail with the hope that other counties may follow the splendid example set. All of the present agencies employed should be continued, as they have their distinct place. They should be further vitalized by a thoro-going county library system.

MECKLENBURG COUNTY

Library privileges were extended to the people of Mecklenburg County in October, 1912, and were withdrawn in January, 1915, because the County Board of Education decided to discontinue the annual appropriation to the library of $300. Such a small amount did not allow the sending out of traveling libraries, but teachers were permitted to take as many as twenty books at a time, and quite a few managed to get that many to their schools. The county people read over 7,000 books during the time the library was open to them. Reference work is still being carried on for the county high schools.

DURHAM COUNTY

In April, 1914, the Board of County Commissioners of Durham County made an appropriation of $400 per year to the Durham Public Library. In July, 1917, they increased this to $600 per year. This is too

small to do more than admit the rural residents of the county to the usual library privileges extended to the city residents. However, a special privilege is extended to the teachers of the county schools whereby they may take out a number of books at a time for use in their schools. The teacher acts as librarian and lends the books to the children. The number of books and length of time are determined by the needs of the teacher. This method has proved very satisfactory and supplements the school libraries. Books are not delivered to the rural residents, but they are often returned by parcel post.

The county is small, and with the Fords to help them, people find the library very convenient.

GUILFORD COUNTY

The Greensboro library was made free to Guilford County April 15, 1915, this long-desired end having been accomplished thru the coöperation of the County Commissioners, who appropriated the additional income to make such a step possible, payment being made thru the County Board of Education.

The income asked for was $1,500, and at first $1,250 was promised, but the whole amount asked for was given as soon as the success of the plan was apparent. This fund is paid to the treasurer in monthly installments and constitutes the book fund of the library.

At the time the measure was adopted one of the trustees was on the point of withdrawing at the close of his term, not desiring reëlection. In his place, to represent the county, the city appointed the Guilford Superintendent of Education, who fortunately resides inside the corporation limits, so that the library law was complied with.

An effort was made thru the newspapers to notify the county, and books began to go out slowly on the new borrowers' cards. Six new stations previously planned for now received the books most cordially, the post office authorities in each case giving cordial coöperation and free service as librarians.

Transportation

Book cases holding 50 books, each lettered with the name of the library and of the station, have been supplied in each instance. These book cases are permanent, but two packing cases were also made for each station. They are made to weigh pounds each when filled with 25 books, a keys are kept at each end of the line. T station librarians often find friends to fu nish transportation free of charge, b where this is impracticable the library pa the cost of parcel post both ways. Ind vidual borrowers in the county can ha books sent to them by mail by paying t costs both ways. Such loans, like t county loans from the desk, are made und the city library rules.

Regulations for Stations

There is no limit to the time the statio should keep their books, except that th may not return them within the first mont In each case a few very simple rules we sent to the librarians, asking them to va as local conditions required. No fines a asked except for damaged books.

Book Selection

Requests for books from the county a always filled as promptly as possibly, a books are sometimes purchased with has to meet a call, but as a rule the books s lected are 40 per cent fiction, 20 per ce non-fiction, 24 per cent juvenile fiction, a 16 per cent juvenile non-fiction. Exce on request, juvenile fiction sets are n sent. Most of the county borrowers sho a normal appetite for good fiction.

What a Small Tax Will Yield

Where the work has been based on a appropriation from the counties rather tha upon a tax upon all the assessed propert and where a library already established ha been utilized, the service has been secure for approximately one-seventh of one ce per $100 worth of property in Mecklenbur one-fourth of one cent per $100 in Durhan and three-quarters of one cent per $100 i Guilford. In these three counties a levy o one cent on the hundred would yield i Mecklenburg $2,203, in Durham $2,123, an in Guilford $1,986.

Similarly, in other North Carolina cou ties for two cents on the $100, Cabarru could appropriate to the Concord librar $1,271; Rowan to the Salisbury librar $2,230; Cumberland $1,557, and largely in creased library facilities for all the peopl could be provided without burdening an one heavily.

A Successful Community Drying Plant in Wahoo, Nebraska

AST year the people of the United States awoke to the fact that immediate steps for the prevention of od waste were imperative. We are going profit this year and next year and every ar hereafter by some of last year's enrced experiences. One of the developents of last summer was the community ying plant for the preservation of fruits id vegetables which might otherwise have en allowed to go to waste at the farms stores or market places. A successful launching of this plan in Nebraska. Becoming convinced that the preservation of food could be more quickly and easily accomplished by the use of a drying plant rather than by community canning, she interviewed the Mayor of Wahoo, and jointly they arranged for a public meeting in the City Hall for the purpose of explaining the community drier. At this meeting a committee was appointed to look after the financing and installing of a hundred-tray capacity drier. This committee went be-



THE WAHOO COMMUNITY DRIER INSTALLED IN A ROOM IN THE CITY HALL

ant of this kind was located at Wahoo, eb., and practically the same plan was llowed in eleven other communities—nine them in Nebraska. Municipal or Govnment-owned drying plants have been in ccessful operation in European countries r years, but we Americans are only just ginning to practice our new virtue—rift.

Miss Florence Dunn, connected with the xtension Service of the University of ebraska, is primarily responsible for the fore the County Commissioners and City Council, explained the project and asked for funds for half of the installation expense from each body. These were granted. The blue prints were then turned over to a contractor, who made the cabinet and fifty trays, and the other fifty trays and the motor were ordered from another dealer. The plant was installed in a room of the City Hall, room and power being donated by the city.

A woman living next door was secured

as caretaker. The patrons brought their products to the room, and with the help of the caretaker placed them on the trays. A rotary slicer and apple peeler, corer and slicer were provided for the use of any woman who preferred to prepare her products in the room. A flat charge of 5 cents per tray was made for drying any product. The length of time required for drying varied with the product, its preparation, the location in the cabinet and the humidity of the air. A stove was placed in the room for decreasing the humidity of the air in moist weather, but it was not used. Corn and apples were the chief products dried. Saunders County suffered a severe drought, so that the drier was very little used; but in spite of this drought 207 trays were dried. It is hoped that a much more extensive use of the drier will be made this year, as bett gardens are anticipated.

The advantage of the community dri to the busy farmer's wife in the count community can scarcely be overestimate Her work is heaviest in the summer, wh vegetables and fruits must be saved f winter use. The establishment of a co munity drying plant at a consolidat school, country church or centrally locat farm home would offer a great relief fro her heavy kitchen duties, as well as sa much food for the community.

Editorial Note.—Any person interested in the s ject of community drying will find valuable suggestio for constructing the plant, preparing the foods a storing and cooking the dried products in Farme Bulletin 916, obtained free on application to the Di sion of Publications, U. S. Department of Agricultu Washington, D. C., and in Emergency Bulletin No. issued by Extension Service, University of Nebras Lincoln, Neb.

City Traffic Signs for Thru-Travelers

ONE of the most discouraging factors met by the driver of a passenger car or truck to-day in taking a long trip on any thru-highway is the difficulty of finding his way thru any large city and reaching the continuation of the highway beyond. Excellent direction signs are found at most forks of country roads, thus preventing the traveler from taking the wrong road. But when he reaches the gates of a metropolis, he is usually allowed to wander thru the streets, sometimes being so unfortunate as to actually circle around because those whom he asks for directions a not as well acquainted with the city as th should be.

The Chamber of Commerce in Phœni Ariz., has taken pains to protect the travel from such unfortunate occurrences as the Directly opposite the Post Office, where ma thru-travelers stop to secure their mail, t large sign shown in the accompanying illustr tion has been erected. This sign not only sho the names of the thru-highways going ea west and north, but also shows in the low left-hand corner the prop street to take to reach t thru-highways leaving t city. The scheme leaves much better impression the mind of the travel than when he has be forced to make a numb of attempts to find t proper road to take hi out of the town.



THIS SIGN A GREAT AID TO TRAVELERS

This is a form of civ hospitality which may offered either by the ci or by a civic organizati like the Chamber of Co merce, and it is true th more cities will increa their quotas of traveli friends if they will pr vide adequate means showing the traveler t way from the city inste of spending so much e ergy in posting the cou try with signs welcomi the traveler to their city.

Soldier Memorials in Country Towns

By Edmond deS. Brunner, Ph. D.
Secretary, Church and Country Life Commission of the Federal Council of Churches

THOUSANDS of communities thruout America are turning their thoughts toward some fitting memorial to the men who went out from it to fight and win the Great War. Of the many possible plans that have been proposed, few have won greater favor than the suggestion that every community erect a memorial building which would serve as a social, civic and recreational center, a living memorial exemplifying the spirit of pure democracy.

There can be little question about the merits of this plan. These need not be discussed here, but when it is applied to towns of 2,500 and under, problems arise which demand careful thought to avoid mistakes that might wreck the whole enterprise.

Rural America has made progress in the last decade, but there have been some unwelcome surprises along the upward pathway. Scores of neighborhoods have attempted community enterprise and have failed. From these failures the present movement should learn wisdom. Stated in positive terms, these experiences can be summarized in five principles that should guide every such effort.

Points Gained from Experience

1. Every Community Building should answer the needs of its own locality. A building planned for Smithville may not at all suit the needs of Squashtown. A social survey or inventory is a prerequisite of any successful Community Building enterprise. Such a survey will reveal the needs of the community and also its resources and strength. It will relate various interests and groups and show them in proper perspective. It will enable the leaders to form an all-round program and to erect the building with this program definitely in view. "A village surveyed is a village unafraid."

2. Every such building should have adequate supervision. This is a far more difficult problem in the country than in the city. There are fewer people to draw upon. There is less leisure time, and usually less understanding of the intricate problems involved. Just because some minister or teacher is ready to undertake the task is no guarantee that such an arrangement can be perpetuated. An annual community study class in problems of rural leadership, conducted by the church or churches, or by some community organization, is one of the best guarantees of continuing work.

3. The organization controlling the Community Building must be thoroly democratic. It must not fall into the hands of any one group, such as the farm owners as over against the farm tenants, the town as over against the country, the school as over against the church. Every existing agency and group should be represented on the Directing Board. This enables each one to understand the whole community situation the better.

4. Existing situations should be utilized. All over the country, hotels have been going out of business. The barn of a country hotel lends itself admirably to community purposes. The ground floor can be turned into a gymnasium-auditorium. The loft can be altered at slight expense to serve as a community dining hall and social room. The hotel itself, if bought, would furnish room for various organizations as well as quarters for the supervisor. At Newfoundland, Pa., such a plan has been in operation for four years. The cost of the hotel and barn was $3,800. The alterations amounted to $1,200. When the upkeep cost grew too burdensome, the hotel building was sold to the school and used for the Girls' Vocational Department of the High School. It is wonderful what an attractive domestic science kitchen can be made from what was once a barroom!

Similarly, it often happens that a church or some other institution has a community center in active operation. In such places the effort should be made to strengthen and broaden the existing agency. To duplicate social machinery is perhaps a questionable luxury in the city, but in the country it is a crime.

5. Community resources must not be overtaxed. This is what happened in the instance given above, where only the co-

operation of the school prevented a failure. There are many ways of saving space and therefore money, in building smaller community centers. The auditorium can be made to serve a variety of purposes. It is first of all what the name implies, a meeting-place for lectures, musicales, amateur theatricals and similar events. If the floor under the platform-stage is built in sections and mounted on the best grade of heavy casters, it can be rolled out, the chairs piled upon it, rolled back to its place, and the cleared floor becomes available for basketball, volley-ball and hand-ball. The stage then serves as the grand stand for those watching the games. In addition it is possible to have tables folding flush to th wall which can be swung out upon occasio turning the gymnasium into a dining-roo with the center space conveniently clea for those who serve, perhaps even for a orchestra. Similarly, the rest room fo farmers' wives in town for shopping migh serve as the reading-room at night, an other kindred adjustments might be mad in the use of rooms.

Given initial community leadership, plu vision and common sense in following som local adaptation of these principles, and Community Building will be the best po sible memorial in the average village county-seat town.

A League of Neighbors

To the Editor of The American City:

The wonderful community center movement, now gaining such rapid acceptance thruout the country, has met a definite need in the town of Spring Lake, where work along that line has been carried on all winter. The slogan originated by me for the use of our local organization in this work may prove of value in other places in furthering this idea. In working for or building up a Community House or any common center of interest in a town or a county, the thought of the organization as being, in a broad sense, a League of Neighbors seized upon my imagination, and this phra was at once given to our group as a wor ing title. It will be a satisfaction to ha the phrase used wherever it may pro helpful in cementing the feeling of uni and brotherhood which is following th great conflict. I trust that the thoug which a "League of Neighbors" sugges may aid to spread the splendid idea of e tablishing Liberty Buildings as victo memorials thruout the country.

MRS. SAMUEL HEILNER.

Spring Lake, N. J.



GOOD ROADS FIRST AND LAST HELP COMMERCE, SOCIAL LIFE, PROVIDE WORK FO RETURNING SOLDIERS, AND WHEN WELL DRAINED AID RURAL MEDICAL SERVICE

A well-drained water-bound macadam road in Bourbon County, Kansas

FORWARD STEPS
REPORTED TO THE AMERICAN CITY
BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

For this department the editors will welcome short articles from city, town and county officials and heads of departments, on subjects of interest and pratcical value to others engaged in similar work. Photographs, plans, or other illustrative material, should accompany the articles whenever available.

MAYORS

Progress in a Small Iowa City

KEYSTONE, IOWA.—In the last few years ır little city has added numerous improveents, at slight cost to the citizens. There re five hundred inhabitants in our comunity. Our water-works was first conructed in 1897 at a cost of $3,000, and onsisted of a wooden tank and about eight ocks of main. The system was extended ıru one or two blocks every year. In 1916 ıe wooden tank was removed, and a steel ructure was erected. The additional ecessary blocks of water mains were also id, the total improvements costing $4,000. his amount was paid off by the use of a -mill tax and the charge of 3½ cents per arrel to the water consumer.

In 1911 we constructed our City Hall at cost of $49,040. To pay for this, a sinkg fund was established and a tax of two ills levied. With this we have completely aid for the structure.

The school building, shown in the accompanying photograph, was built in 1914 at a cost of $30,000 and is rapidly being paid for with the use of the sinking fund. The school is not, strictly speaking, city property, but belongs to the district, of which our community is the biggest portion. Our total tax rate for city government amounts to .0223 on the dollar.

HENRY F. JACOBSEN,
Mayor.



$30,000 SCHOOL BUILDING IN KEYSTONE, IOWA, A COMMUNITY OF 500 PERSONS

CITY ENGINEERS

A Municipal River Recreation Pier

ALBANY, N. Y.—In the last few years the river front of Albany has undergone a wonderful transformation from its former unsightly and dilapidated appearance. One part of the general improvement made by the city of Albany was the construction of the recreation pier. This pier, which is 900 feet long and 90 feet wide, is located opposite the business section of the city and creates the Albany Basin, between the main channel of the Hudson River and the face of the docks. The pier is reached from Quay Street, a marginal street along the river front, by a three-span reinforced concrete bridge 200 feet in length, with a roadway width of 20 feet and sidewalks of 10 feet.

The pier was formerly privately owned and had a dozen or more old warehouses, only a few of which were in use. The property was all purchased by the city except a portion upon which rests a bridge



MUNICIPAL RECREATION PIER, ALBANY, N. Y., SHOWING SHELTERS, YACHT CLUB AN CONNECTING BRIDGE

abutment, and the buildings were razed to the ground. Concrete dock walls in place of the broken-down wooden bulkheads were constructed, with landings at several places for various kinds and sizes of pleasure and motor boats.

On the pier the city erected two shelters, one band-stand and one public comfort station, brick structures of much architectural merit. It leased ground on the pier to the Albany Yacht Club, on which the club erected a large and fine club house harmonizing architecturally with the buildings erected by the city. The surface of the pier was paved with concrete with geometrical figures of red promenade tile. Openings were left and trees were planted to add to the general appearance and provide shade.

The use of the pier is greatest during the warm months of the year, when the park benches are used to capacity. Adults and children come to get the river breeze, the view up and down and across the river, to see the movement of the river traffic and to watch the motor boats leaving and coming.

The recreation pier, besides being a popular addition to the park system of Albany, has the further merit of being so situated that it is in plain sight of all people coming to Albany by train or boat, and its sightly appearance, together with the other improvements along the river front, give visitors an exceedingly fine first impression of the city.

FRANK R. LANAGAN,
City Engineer.

Business and Residential Street Improvements

Corpus Christi, Tex.—Six years ago city of Corpus Christi was practically wi out any sort of pavements, and during wet or rainy season the conditions of roadways, especially in the black-soil s tion of the city, made vehicle traffic of a kind almost impossible. Horse-drawn a motor vehicles were very frequently s mired in our highways. This condition disgusted both city officials and taxpay that there was a concerted action to i prove our city streets.

During the last five years we have c structed 11.41 miles of bitulithic pa ment thruout the city, besides build cement sidewalks and storm and sanit sewers, placing water mains in the impro streets and installing sidewalk curbs. T total yardage of pavement which has b placed has been in excess of 228,000 squ yards. It was part of the policy of the c when placing the new improved paveme that as much underground work as possi should be done prior to laying the paveme thus saving considerable expense and noyance from promiscuous cutting of pa ments after they had been laid.

The streets improved include all in business district, numerous residen streets and one main thorofare extending the city limits in each direction. This w was done at an approximate cost of thr quarters of a million dollars.

H. A. STEVENS,
City Engineer



NEWLY IMPROVED STREET IN TYPICAL RESIDENCE SECTION, CORPUS CHRISTI, TEX.

PUBLIC WORKS DEPARTMENTS

Good-Fellowship Club of Village Employes

OAK PARK, ILL.—The Oak Park Municil Club, made up wholly of village emoyes, has been in existence a little less an two years. Its founders and members e quite pleased with what it has already complished, and look forward most hopelly to what it may yet do. It is in no nse a political organization, altho its me might indicate it. Membership in the ub is at present confined to employes in e Public Works, Building, Water, Health d Park Departments, and the Village erk's office.

In every city and village carrying on its ork of improvement and maintenance thru veral departments, each doing its work ite independently of the other, there is und to be more or less overlapping and iction, some disregard for each other's ghts, and a lack of that spirit of coöperaon which is necessary if the best results e to be obtained. It was with this in ind that the writer called together a mber of the employes of the several departments from which the membership is drawn, and suggested the organization of a club whose object should be the promotion of good-fellowship and a high esprit de corps among its members, a fine sense of loyalty to the village, and a greater degree of coöperation and efficiency in the work of the several departments.

The idea was well received, and in February, 1917, the club was organized. There have been fourteen business sessions at the Village Hall and three social evenings at the home of the Chairman. Papers have been prepared and presented by representatives of the various departments on the following subjects: Engineering Methods and Records; Street Pavements; Street Openings and Repairs; Sewers and Drains; Water Mains and Services; Buildings; Collection and Disposal of Household Wastes; Prevention and Control of Disease; Problems of the Water Department; Design, Construction and Operation of the Sewer System of Oak Park; Methods of Planning and Constructing Public Improvements in Oak Park; Parks and Playgrounds.

It was hoped that by presenting papers on the above subjects each department would get a clearer insight into the work of each of the other departments, and that a spirit of coöperation, heretofore lacking, might be developed. Judged by results, there is abundant evidence that our object has, to a large degree, been attained.

Many of the papers were of a high order of merit and a real credit to their authors. Until recently the membership was confined entirely to men, but from now on there will be no discrimination as to sex. The topics assigned for 1919 are all based on the war, and as several have been assigned to women, we look forward to some unusually good papers. We believe that the activities

of the club will not only furnish instruction and entertainment to its members, but will result in a higher standard of service as employes.

The village of Oak Park, the home of this club, adjoins the city of Chicago on the west and has an area of 4½ square miles, and a population of approximately 37,000 people. We operate under the village form of government, our elected governing officials being a President, six Trustees and a Clerk. The Village Attorney, the Commissioner of Public Works and the Village Engineer are appointed by the President. The village is almost entirely a residential community.

Up to the present time the only officers of the club have been a Chairman and a Secretary. At the annual meeting in January, however, a full set of officers, including President, Vice-President, Secretary and Treasurer, was elected.

W. F. SARGENT,
Commissioner of Public Works.

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Central Dumping Station, Fourth Street Cleaning District

PHILADELPHIA, PA.—The first floor of the central dumping station of the 4th Street Cleaning District in Philadelphia is used by the contractor for this district as a stable. Previous to the construction of the bins, shown in the first photograph, the second floor was used, as it is now, as storage space for street cleaning equipment, such as machine brooms, sprinklers, dirt wagons and ash wagons, and the space now occupied by the bins was an open gangway, thru which all refuse, except garbage, including ashes, rubbish and street dirt, hauled there by teams, was dumped directly into trolley cars equipped with large box bodies. This arrangement required a trolley car at the dumping station at all times, otherwise loaded teams from the ash and rubbish routes and various street cleaning gangs that had arrived could not dump their loads and the entire work was delayed.

The 4th Street Cleaning District includes the business portion of the city and is bounded by Poplar Street on the north, South Street on the south, and extends from the Delaware River on the east to the Schuykill on the west. The streets cleaned include 2,235,900 square yards of pavement. The ashes and rubbish are from a contributing population of 202,557 (according to the census of 1910) and from the business houses. From each building there is removed a weekly amount of 400 pounds of ashes; from residences an unlimited amount of rubbish, and from retail store buildings not more than four barrels.

Each of the nine bins, some of which are shown in the first photograph, has a capacity of 12 cubic yards. They are arranged against the east wall and are supported by it and a brick wall under the dumping side. Above the bins is a timber gallery, on which are the hand winches, one for each bin, used in closing the drop-bottom doors.

This gallery is supported by timbers e



SECOND FLOOR, CENTRAL DUMPING STATION, SHOWING THE ARRANGEMENT SUITABLE ONLY FOR END DUMPING VEHICLES

nding from the bin artitions. The bin partions are vertical; the ther two sides are vercal from the elevation f the dumping sill down a point half-way to ie bottom of the bins, here they converge to ie drop-bottom doors. hese are hinged paral-l to the center line of ie line of bins, and hen opened swing own and out.

Loaded wagons are auled up an incline long the west wall of ie building by an elecic hoist. Under the bin iere is a thru passage om the south side of ie building to the north side. Trucks enter t the south end, receive their loads and dart by the north end for the point of final isposition. The trucks have 12-cubic-yard de-dump bodies. The second photograph ows one of these trucks emerging at the orth entrance.

In the summer time most of the street eaning in this district is done at night, on ccount of traffic conditions. All street dirt picked up by wagons. These are hauled the plant and dumped, and the next morng the contents of the loaded bins are disarged into trucks and hauled away. In ie winter time, for obvious reasons, the est street cleaning is done in the daytime; ie dirt from this work, together with the shes and rubbish, is hauled to the dumping ation in the daytime. While conditions ave not been such as to test the capacity f the plant, over 8,000 cubic yards have een handled weekly with facility. E. H. are is the contractor in this district.

DUDLEY T. CORNING,
Division Engineer, Bureau of Street Cleaning.



ONE OF THE TRUCKS EQUIPPED WITH 12-CUBIC-YARD SIDE DUMP BODY, FOURTH STREET CLEANING DISTRICT, PHILADELPHIA

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The Consulting Engineer

Who is the man who'll draw a plan for everything you desire?
rom a transatlantic liner to a hairpin made of wire?
Vith 'ifs' and 'ands,' 'howe'ers' and 'buts' who makes his meaning clear?
he work-disdaining, hope-sustaining *consulting engineer.*"

- POLICE - DEPARTMENTS

Bringing the Police Department Up To Date

INDIANAPOLIS, IND. — Some sweeping changes have recently been made in the Indianapolis police force, and most of the changes are in conformity with the recommendations contained in the municipal survey prepared for us in 1917 by the New York Bureau of Municipal Research. The changes are as follows:

The establishment of three working shifts for patrolmen

The creation of a training school for all members of the department

The establishment of a complete system of police records which shall reflect crime conditions in the city.

The abolition of the office of inspector of police

The creation of three reserve squads for emergency work in connection with the suppression of various forms of crime

The establishment of a system of fixing responsibility for information as to law violations

The enlargement of the motorcycle squad assigned to automobile speeders

Provision for more policemen at the union station to handle traffic.

WATER DEPARTMENTS

Municipal Departments Pay for Water

South Bend, Ind.—One of the gross injustices which are heaped on water departments in most cities is the requirement that they furnish water free to all other municipal departments. This condition has enabled many municipal departments to operate at a seemingly low cost, while the water department was forced to ask for exceedingly high appropriations which could not be understood by most of the citizens.

Our water department has been furnishing the city and its various departments with all the water they needed and also fire protection for the entire city without any direct charge. Also, no revenue has been received from the connections with industrial plants, thru which we are ready to serve them at any time in case of a breakdown of their own systems. The charge to the consumer has been a minimum of 50 cents per month on all sizes of meters, which was really an injustice to the water department, as it provided a pitiably small revenue.

With these conditions prevailing, the department thought it proper to go before the state public service commission and ask for a ruling by which it would be possible to increase the revenue of the water department in a proper manner.

The ruling which we secured is as follows:

It is ordered by the Public Service Commission of Indiana that petitioners, on filing and posting as prescribed by law, shall put into effect the following changes in its charges, and its rules and regulations:

(1) Every metered water-supply service shall have a minimum ready-to-serve charge on every meter installed, varying with and based upon the size of meter required and installed, as follows:

Size of Meter	Monthly Minimum Rate
½-inch, ⅝-inch and ¾-inch	$ .50
1-inch	.75
1½-inch	1.00
2-inch	2.00
3-inch	5.00
4-inch	10.00
6-inch and over	15.00

(2) For each connection from the mains of the Municipal Water Department to private mains there shall be charged for ready-to-serv varying with the size of the service runnin from the mains of the Municipal Water De partment to the mains privately owned a follows:

1-inch connection	$ .75 per month
1½-inch connection	1.00 per month
2-inch connection	2.00 per month
3-inch connection	4.00 per month
4-inch connection	8.00 per month
6-inch connection	10.00 per month

(3) For each fire hydrant located and main tained by order of proper authorities of th city of South Bend, on a public street or othe public thorofare, said city shall pay at the rat of $40 per annum.

(4) For all connections made to sewer there shall be a charge of $15 per annum This applies to sewer flush tanks.

By placing the requirements of this orde in effect, the revenue of the Water Depart ment will be increased between fifty an sixty thousand dollars a year without plac ing undue burden on any department o consumer. In this manner it has been pos sible to keep up with the increased cost o producing pure water and distributing under proper pressure thruout the city t consumers.

James N. Luther,
Superintendent of Water Works.

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Making the Large Consumer Pay

Sioux Falls, S. D.—When the munic pal water-works of Sioux Falls was estal lished, the Water Commissioners realize that they had to compete with other citi which, on account of their more favorab location, were able to deliver water mo cheaply to the consumer and thus cou induce many manufacturers to locate wit in their borders. The Sioux Falls Boar being alive and progressive, met this con petition by making a low rate to all lar consumers. It was decided at that tim that the higher rate for small or domest consumption and the quantity used by th small consumers would take care of th major portion of the interest, depreciatio overhead and operating expenses. A low rate to manufacturers and other large co sumers brought only a small margin profit over the cost of fuel, interest, e However, the Commissioners realized th value of these industries to the city a were willing to make this sacrifice.

When the increase in cost of fuel and l bor took place, the cost of pumpage to t city, if the old rate had been continue would have meant a considerable lo

FOR WATER PER 100 CUBIC FEET PER MONTH—SCHEDULES OF METER RATES

For	OLD RATES Cubic Feet	Old Rate	Costs	Total Consumed	Total Cost	For	NEW RATES Cubic Feet	New Rate	Costs	Total Consumed	Tota Cost
rst.....	1,400	0.22½	$3.15			First.....	1,400	0.22½	$3.15		
cond.....	1,400	0.15	2.10	2,800	$5.25	Second.....	1,400	0.15	2.10	2,800	$5 25
hird.....	1,400	0.12	1.68	4,200	6.93	Third.....	1,400	0.13	1.82	4,200	7.07
ourth.....	1,400	0.11	1.54	5,600	8.47	Fourth.....	1,400	0.11	1.54	5,600	8.61
fth.....	1,400	0.10	1.40	7,000	9.87	Fifth.....	1,400	0.11	1.54	7,000	10.15
ext.....	7,000	0.07½	5.25	14,000	15.12	Next.....	7,000	0.09	6.30	14,000	16.45
ext.....	14,000	0.06½	9.10	28,000	24.22	Next.....	*	0.08	11.20	28,000	27.65
ext.....	14,000	0.06½	9.10	42,000	33.32	Next.....		0.08	11.20	42,000	38.85
ext.....	14,000	0.06½	9.10	56,000	42.42	Next.....		0.08	11.20	56,000	50.05
ext.....	14,000	0.06½	9.10	70,000	51.52	Next.....		0.08	11.20	70,000	61.25
ext.....	70,000	0.06¼	43.75	140,000	95.27	Next.....		0.08	56.00	140,000	117.25
ext.....	140,000	0.06¼	87.50	280,000	182.77	Next.....		0.08	112.00	280,000	229.25
ext.....	140,000	0.06¼	87.50	420,000	270.27	Next.....		0.08	112.00	420,000	341.25
ext.....	140,000	0.06¼	87.50	560,000	357.77	Next.....		0.08	112.00	560,000	453.25
ext.....	140,000	0.06¼	87.50	700,000	445.27	Next.....		0.08	112.00	700,000	565.25

* All over 140,000 cubic feet is sold at a rate of 8 cents per 100 cubic feet. Figures under new rates are continued below this point to show increased revenue from large consumers.

Minimum charge $6 per year, quarterly, under both rates. All bills under both rates are subject to 10 per cent discount if paid on or before the 10th of the month.

ierefore higher rates were established. A ɔmparative tabular statement of the old ıd new rates is given above.

It is interesting to note that not a single ɔmplaint or objection was made to the in-ease in the rate. The customers were ɔtified in advance of the new rate and the ecessity for it. It is estimated that the ıcrease will offset the greater cost of ımpage, so that the annual income from ater revenue will remain the same. The ırds which were sent to all customers ıow the new rate and contain valuable in-ɔrmation on how to test meters, how to cate leaks, the cost of such leaks, and her points. This has helped materially reduce the number of complaints about gher bills for water, which were gener-ly caused by wastefulness and by leaks in ɛtures within the consumers' property. ow when a consumer discovers that there a leak somewhere affecting his pocket-ɔok, he does not stop to complain about his eter bill, but immediately employs a umber to check the waste. Following is ıe information which was printed on the ıck of the card showing the new rates.

TO WATER USERS

How to Test Your Water Meter

Every water consumer who takes water by meter easurement owes it to himself to know that he is ying for no more water than he received. He ould therefore learn to read his meter and be reful to observe that there is no waste of water; d if any leak is found in his pipes or fixtures, it ould be repaired immediately, as any waste, how-er small it may appear when running, will look rge when found in the bill, and the Water Depart-ent has no alternative but to charge for the full ıount, whether consumed or wasted.

A meter will not register more water than passes ru it, popular opinion to the contrary notwithstanding, and if surprised at the size of the bill, test your meter; it requires no expert to do it, and a simple method is this: See that no water is being drawn from any of the fixtures, and watch the circle on the dial registering the smallest number of cubic feet. If the hand moves at all, there is a leak somewhere, the extent being shown by the movement of the hand. If this is the case, find it, and have it stopped.

Take reading last hour before retiring at night and first hour in morning before any water has been drawn, and if the meter has registered any, you have a leak in some place. Examine every place, especially the flush box in the toilet room or basement.

Have you ever realized the cost of letting your spigot leak or leaving it open after using? An orifice the size of an ordinary lead pencil will, under 60 pounds pressure, discharge about 31 gallons an hour, 744 gallons a day, or 22,320 gallons a month—which is more than will be legitimately used by three families of five people each, amounting to, at the present rate, $5.42.

We find that there has been a decided spirit of coöperation developed between the citizens and the department, and that the citizens are beginning to feel a sense of proprietorship in the department.

The city of Sioux Falls is 95 per cent metered, and it is hoped shortly to make this 100 per cent. Had it not been for meters, the city would no doubt have been compelled to put in additional pumps before this time to take care of water which was being wasted. It has been our experience that those who object to metering a water supply do so from a selfish motive; they expect personal benefits from a flat rate, as they are able to use more water than they pay for and make some other consumer pay for the extra water which they are using. We truly believe that where there are meters, 95 per cent of all leaks are discovered, that loss to consumer and waste are stopped and coal saved.

JOHN MUNDT,
Water Commissioner.

FINANCE DEPARTMENTS

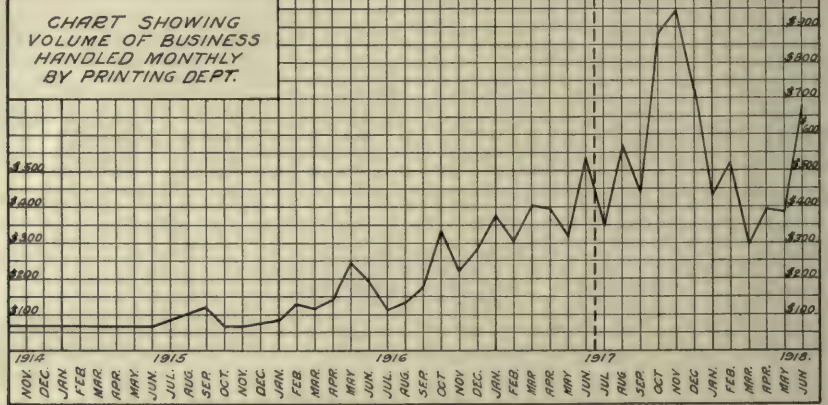
A Municipal Printing Department

PASADENA, CAL.—On account of the substantial success achieved since its establishment, Pasadena's municipal printing department now deserves to be classed as one of the city's essential public utilities. Its work, however, is restricted to city government work, and it does not in any way enter into the commercial field outside.

This department was begun in 1914, as an adjunct to the city's general clerical work, by the purchase of a large-sized multigraph machine using metal type and having as part of the outfit a type-carrier on which the composition was done. The machine was at first operated in one of the school printing course, and thus afford the the opportunity to earn wages while goin to school and also to obtain experience supplement their school work. This pra tice has been satisfactory to both the city shop and the students. Sufficient skill labor is employed to insure a first-class ou put, and has been found necessary at a times, as the high school supply has n been sufficient to take care of the work.

In 1916 a flat-bed press and other equi ment were purchased, so that practically a of the city's printing work is now done i its own shop. Linotyping, ruling and bin ing are done outside.

The report for the year ending June 3 1918, shows that up to date the plant co the city $3,579.73 for equipment. The sa ing to the city, computed by comparing th cost for each job with the prices former paid by the city, was $3,915.87 to that dat In addition to this saving, the departme

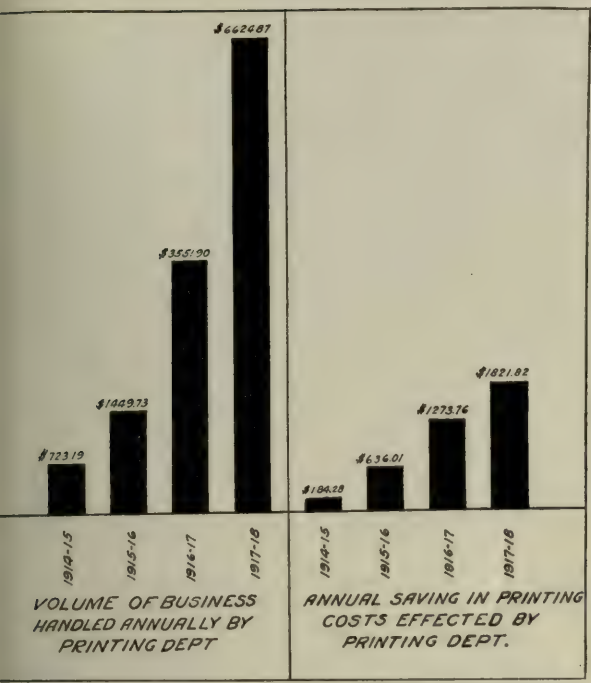


ONE OF THE GRAPHIC METHODS BY WHICH THE CITY PRINTING DEPARTMENT OF PASADENA, CAL., KEEPS TRACK OF ITS OUTPUT

departments, but its success was so manifest and the demand for general city printing became so great that it was found necessary to employ one person to look after this work exclusively. In September, 1914, the present manager, Julian Randolph, took charge. He was at that time a high school student and handled the department on part time. Later he was graduated from the Pasadena high school, and he has since devoted his time to the management of the printing department.

It has been the policy of the city to employ high school students as far as available and when sufficiently proficient in their has made a profit of $572.66, which is plac in a depreciation reserve fund. Except f the per cent for this depreciation fund, t department is run at cost. Anticipating t requirements, paper is purchased in qua tity and on the most favorable market, th decreasing costs for stock. No old stock wasted, and all material not otherwise us ful is put into office use as note-pads, e Many of the type forms have been sav and stored, thus eliminating the resetti each time the form is needed.

Altho this year's volume of business e ceeds last year's by 86.5 per cent, the lab cost of this year is only 60.9 per cent high



POSITIVE PROOF THAT THE CITY PRINTING DEPARTMENT IS AN ASSET, RATHER THAN A LIABILITY

han last year. This labor-saving, which mounts to $459.61, is largely due to the olding of our forms, as noted above. Parts f the linotype for last year's annual reorts, ordinance books, etc., have been reained and this will tend to further reduce ne cost of these books n the coming year. The vages paid are equal to nose paid by any other rinting concern in the ity.

The cost accounting ystem has been revised o meet the requirements f a growing business. The accountant's data re now so arranged as o form a complete plan f the shop work for ach job, without additional writing. In this vay, preliminary planning, shop production nd cost accounting have been so coördinated as o eliminate duplication f clerical work and implify the production of printing.

The actual cost of work done for all city departments during the last year has totaled $6,624.87, an average of $552.07 per month. The cost of the same work at printer's prices formerly paid by the city would have been $8,446.69, an average of $703.89 per month. Thus the city effected a saving for the year of $1,821.82, or an average of $151.82 per month.

Pasadena's population is about 45,000.

A. L. HAMILTON,
Commissioner of Public Finance.

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Prisoners Pay Their Fare

CORPUS CHRISTI, TEX.—Several years ago this city found itself in financial straits, so far as the transportation of prisoners to the city jail was concerned. This situation resulted in an ordinance providing that any person convicted of the violation of any law or ordinance, and conveyed to the station in the city automobile, shall pay into the city treasury 50 cents for his transportation and 50 cents for the transportation of each of the officers required to arrest him.

ED CUBAGE,
City Secretary.



BEGINNING OF MUNICIPAL PRINTING DEPARTMENT, PASADENA, CAL.

HEALTH DEPARTMENTS

Proper Cleansing of Soda Fountain Glasses

New York City.—A recent communication from an officer of the army in regard to the cleansing of glasses used for soda water and other "soft" drinks in New York City has called up a subject in which the Health Department has been interested for some time. The officer pointed out that since many soldiers patronize soft-drink establishments, there was danger of their contracting diphtheria or other mouth-borne infections from the glasses if not properly cleansed.

In consequence, the Bureau of Food and Drugs instituted in July a special investigation and survey of soft-drink dispensing establishments thruout the city to determine how thoroly the provisions of the Sanitary Code were complied with. The section of the Code involved reads as follows:

Sec. 144. *Cooking, eating and drinking utensils to be properly cleansed after being used.*—All utensils used in the preparation, service, and sale of any food or drink intended for human consumption shall be properly cleansed after being used, and no such utensil shall, under any circumstances, be used a second time unless it shall have been, after the previous use thereof, so cleansed. In such cleansing the use of water which has become unsanitary by previous use is prohibited.

The term "properly cleansed" as herein used shall be taken to mean cleansing after each use in a solution of soap powder or soda in hot water and the employment of friction supplied by means of a brush or other suitable implement followed by rinsing in clean hot water; by sterilization, or by some equally effective method.

The table given below gives the results of this special campaign.

The establishments involved are being kept under special observation, as well as all others in the city. This has been the rule since the adoption of the section of the Code given above.

The Department's Research Laboratory has been engaged for some time in investigations to determine the best routine measure for rendering public drinking glasses free from the danger of carrying infectious material. While the work is as yet incomplete, the very simple procedure of dipping a used glass in chlorine water (under 2 per cent) and then rinsing it in running water has been found to free it from germs left upon it by the mouth of the last user. The chlorine water may be prepared by shaking up sufficient chlorinated lime in water to make a saturated solution, and allowing the mixture to stand over night. The chlorine strength should then be standardized.

Another effective means of rendering used glasses safe is by the use of one of the small flowing-steam sterilizers on the market. After the usual washing, the glasses are steamed in the sterilizer for half an hour. Such sterilizers are very economical in the use of gas; one small Bunsen burner flame is sufficient for a sterilizer holding from one to two dozen glasses. Special gas-heated hot-water apparatus may be had thru the various city gas companies.

Besides complying with the law in properly cleansing their soda fountain glasses proprietors of such establishments will find themselves amply repaid for any extra labor thru increased patronage from a discerning public.

ROYAL S. COPELAND, M. D.,
Commissioner of Health.

Borough.	Inspections.	Violations.	Summons Issued.	Fines.	Sentence Suspended.	Cases Dismissed	Cases Adj'd.	Cases Pend'g.
Manhattan	693	142	142	$396	11	4	13	114
Brooklyn	849	89	89	190	15	3	6	65
Bronx	111	26	26	85	..	..	2	24
Richmond	71	12	12	16	3	4	..	5
Queens	—	27	27	25	2	..	..	20
Totals	1,724	296	296	$712	31	11	21	228

PARK DEPARTMENTS

A New Gravel Driveway for a City Park

Salt Lake City, Utah.—The new Liberty Park drive in Salt Lake City encircles the park for which it is named. The drive is elliptical in outline and is 1¼ miles in circumference, with an average width of 50 feet. Up to the time of its improvement this was a dirt road—a good drive in the summer time when properly sprinkled, but



75-HORSE-POWER TRACTOR, DRAWING SEVEN LOADED TRAILERS, PROVING ITS VALUE IN THE CONSTRUCTION OF LIBERTY PARK DRIVE, SALT LAKE CITY, UTAH

lmost impassable during the winter and arly spring.

Salt Lake City is fortunate in having at ts very door an unlimited supply of first-lass coarse and fine gravel for road-uilding, which, when properly placed and olled, makes a road second only to the nuch more expensive macadamized or ement roads.

In constructing the Liberty Park drive a 5-inch base of coarse gravel was first laid nd thoroly rolled. On top of this a 2-inch overing of fine pea gravel was laid and wet lown, and the roller was again brought into lay. The rolling was repeated until the ine gravel was well worked into all open-ngs in the coarser gravel. The result is a plendid hard-surface road which sheds the vater well and can be used in all seasons.

A 75-horse-power tractor engine, pulling even Troy trailers, each with a carrying apacity of 5½ cubic yards, was used in building this driveway.

When the work was begun, the material was hauled from the city gravel pits, a distance of three miles, by the tractor pulling seven trailers. Two trips were made each working day of eight hours, and about 42 cubic yards of gravel delivered at each trip. Later an arrangement was made with the street car company whereby the material was delivered to the east entrance of the park and automatically loaded into the trailers at a cost of 51 cents per cubic yard. The trailers are equipped with an unloading device which dumps the load from the bottom.

This road has been such a pronounced success that the Department of Parks and Public Property intends to construct more gravel roads in some of the other city parks in the immediate future, using the same tractor and trailers.

H. H. GREEN,
Commissioner of Parks and Public Property.

Centralized Buying for Municipalities

CENTRALIZED buying for municipalities is recommended by The National Association of Purchasing Agents. At a recent meeting of the Legislative Committee of this organization of the nation's buyers, the following resolution was adopted:

Whereas, substantial economies are being effected by various municipalities, states, federal departments and other governmental bureaus thru a centralized purchasing department in charge of a purchasing agent, be it

Resolved, that we recommend that all local associations affiliated with the National Association of Purchasing Agents take a keen interest in the movement and encourage the general establishing of such departments. Further, be it

Resolved, that the local associations of The National Association of Purchasing Agents use their best endeavors to have legislation framed which will permit the incumbents of such departments to perform their duties in a free and untrammeled manner, secure from political influence.

There Should Be Ten Million Victory Gardens in 1919

By Charles Lathrop Pack
President, National War Garden Commission

"VICTORY GARDENS" are even more important than were "War Gardens." There are more millions to be fed in Europe. At least 200,000,000 people abroad are partly dependent on this country for their daily bread. Uncle Sam has become the Joseph of the modern world. He has promised to send 20,000,000 tons of food to Europe in 1919. The "victory gardeners" can make it more, and reduce by that much the suffering and starvation abroad. There were 5,285,000 war gardens in the United States in 1918. There should be 10,000,000 Victory Gardens in 1919. Adopt the slogan of the army: "It can't be done! Let's do it!" Mr. Hoover has said there would be seven years of shortage—"seven lean years"—before normal food conditions are restored. America's vast army of home food producers can materially reduce this period.

Chambers of commerce, civic leagues and similar organizations all over the country assisted loyally in the war garden campaign. Wonderful results were accomplished and fine records made in many places. There were probably in every city and town, however, some vacant lots which escaped the general round-up. They should all be included in the Victory Garden "draft" of 1919.

The trade or civic body thru the channels which it possesses for getting articles published in the daily papers, and in other publicity ways, should continue to impress upon the people the great demand for food and how they can help not only themselves and their city by cultivating all vacant lots, but how they can perform a humanitarian service for the world.

The offering of prizes for the best Victory Gardens is an excellent means of stirring up friendly rivalry. Local organizations and many business men will be glad to coöperate in this way. A "Victory Garden Dinner," to be composed largely of products grown by the "city farmers," would attract widespread attention to the work and be an inspiration to hundreds o back-yard and vacant-lot tillers. If possibl there should be a garden supervisor or i structor who can give his entire time to ac



VICTORIOUS WAR GARDENERS

Walter Wolski, an employe of the Inland Ste Company, Chicago, with his family and the produc raised by them in the prize garden of the plant. M Wolski raised between $150 and $200 worth of produc in 1918 and expects to double this in his Victory Ga den in 1919. His wife put up more than 200 cans o vegetables for winter.

vising and guiding the food growers. Th expense will be an excellent investment.

A live organization having adequat headquarters can make its offices the cente of the gardening movement. The listin and apportioning of all vacant lots can b done readily from there. There are fe owners who will not be glad to have th rubbish and weeds cleaned from their un used land in order that it may be utilize for such a patriotic purpose. The value o city property will thus be enhanced.

EDITORIAL NOTE.—The National Garden Commissio will be glad to send its Garden Primer to readers o THE AMERICAN CITY who apply for it.

The Construction of Modern Brick Pavements

The Relative Value of Sand Cushions, Cement Mortar Beds and Green Concrete Foundations

By Major W. M. Acheson
Division Engineer, New York State Commission of Highways

BRICK pavement construction has been subject to far greater changes in design since 1915 than has any other pavement. These changes, thru a more rational use of the same amount of material, have tended to greater strength and durability. In this paper it is the intention to describe the three different types of pavement, or, I might say, the old and the new methods, and point out the advantages and disadvantages of each.

Foundation Course

The foundation course is usually made of cement concrete, and in general a 1:2-½:5 and 1:3:6 mixture is specified, the thickness depending largely upon the character of the subsoil and the amount of the traffic. While the cement concrete foundation predominates in brick pavement, the construction of many miles has been laid on foundations of compact sand, gravel and broken stone. Engineers will agree with me on the absolute necessity and economy of concrete as a foundation for brick and all types of block wearing surfaces, together with mixed types of bituminous pavements. In fact, to my mind, the time is here when highway engineers are called upon to design rigid types of construction to meet the demand of modern traffic, which means the development of heavy motor-driven traffic.

Engineers are now giving special attention to the different parts of a pavement in order to meet existing conditions. Metal reinforcement is sometimes specified, to be imbedded in the concrete foundation over soft places and recently dug trenches. By this it is hoped to prevent the cracking which in the majority of cases comes from the condition of the subsoil thru the base to the surface of the pavement. Experience has shown that an evenly built foundation which conforms to the finished cross-section of the road will result in a uniform thickness of sand cushion and a smooth wearing surface. In this pavement, as in all other pavements, the key to the whole situation is the condition of the subsoil and the foundation, and in this phase too great care cannot be exercised from the design or construction standpoint.

Sand Cushion

Brick pavements with a sand cushion or a bed course of plain sand have been built since the first brick pavement constructed in 1870, and represent at the present time by far the largest percentage of the three types. The thickness of the sand cushion called for in the older specifications in constructing this type of pavement has been considerably greater than that advocated by most engineers at the present time. The theory advanced in behalf of the sand cushion is that it serves the double purpose of providing a uniform bearing for the wearing surface and supplies resiliency under traffic. With this in mind, specifications were made calling for a sand bed not less than two inches in thickness. Many of these sand cushions were not given the proper care in constructing and were formed by screeding out the full thickness at one time without necessary consolidation by hand rolling. Many failures in the brick wearing surface were therefore traced directly to the non-uniformity of the sand bed. An endeavor was made to correct this in later specifications by calling for a sand cushion of not over one inch in thickness, together with requirements as to its graduation by sieve analysis and the amount of loam permissible in the sand used.

New York State specifications for the bed sand required a sand of which 100 per cent passes a No. 6 sieve, and not over 90 per cent thru a No. 20 sieve. "An excessively fine sand will not be accepted in this class. Sand may be rejected if it contains more than 15 per cent of loam and silt," which amount was deemed advisable for proper compacting.

Present-day specifications describe care-

fully the manner of forming or building up the sand bed by screeding it in layers and rolling it in order to form as nearly as possible a uniform bearing for the wearing surface.

Notwithstanding all the precautions and refinements of the later specifications where a sand bed is used, it has been shown that the defects were not overcome in the wearing surface, this being due to the fact that it is impossible to properly compact a sand bed varying in moisture content and thickness. Also, a wet sand cushion when dried out will shrink and leave hollow spaces, consequently defeating its function of providing a firm and uniform bearing at all times for the wearing surface. Another defect of the sand cushion is that it works up into the joints of the brick and prevents the joint filler from thoroly penetrating and properly bonding the wearing surface. In the repairing of many of our brick roads I have seen defects in the surface caused by the sand cushion coming up into the pavement at least 2½ inches.



Courtesy of National Paving Brick Manufacturers Association

A BRICK PAVEMENT OF MANY YEARS' SERVICE IN CLEVELAND, OHIO
Constructed with 6-inch concrete foundation and cement filler

Wearing Surface

The wearing surface of the pavement is composed of vitrified paving brick joined together with a filler. Smaller bricks were used in the early manufacture for brick pavements, and without lugs. Later, in order to obtain a uniform width of joint to take the filler, the brick were made with lugs by repressing. The standard pavin brick of to-day is 3½ inches in width b 8½ inches in length by 4 inches in depth laying 40 bricks to the square yard. Thes brick are larger than the first brick manu factured.

The wire-cut lug brick came into vogu in 1910, the first wire-cut lug bricks bein used by the New York State Commissio of Highways in the construction of th Williamsville road near Buffalo. Thes brick have steadily increased in favor wit paving engineers and are now universall called for. The experience of New Yor State with the wire-cut lug brick has bee that it possesses uniform lugs and fibe sides, due to the method of manufacture The fiber sides, which are always obtaine in a wire-cut brick, give a greater bon strength at all times, while the uniform lugs insure a thoro and even penetration o the filler and provide parallel joints; all thi means better construction. The squar edge of a wire-cut brick means, in addition a flush joint, which produces at all times smooth wearing surface and one which wi not cobble under traffic.

Two classes of joint filler are used t bond the brick units together, the cemen grout filler and the bituminous filler. M experience and observation are that the re sults from the cement grout filler are su perior and more durable than the result from the soft filler and that the cemen

out filler is absolutely cessary in the modern mi-monolithic and nolithic types of con- ruction. If soft filler used, the old sand bed more likely to be the sign. New York State ecifications for cement out filler allow the use grout made of one rt cement and two rts of grout sand if achine mixed, and a out made of one part ortland cement and one rt grout sand if hand ixed. In general, the ecifications of to-day ll for a grout made of ne part cement to one nd one-half parts of nd. Machine mixed rout is, in the opinion f most paving engineers f to-day, far superior to hand mixed, and t the same time is more economical in anipulating. Paving engineers recognize ne necessity and importance of the grout ller and are taking every precaution in the election of the materials and their applica- on.



Courtesy of Dunn Wire-Cut Lug Brick Company

BUILDING A MONOLITHIC BRICK PAVEMENT

Double templet striking concrete foundation and spreading cement sand film

Brick Pavements with Cement Sand Beds

Experience and observation have demon- trated that many failures in the wearing rface are due to the sand cushion. The olution of this problem has been the de- elopment of the cement sand bed, which rovides a non-shrinking, rigid super- oundation, thus making the first step ward a brick monolithic type of construc- ion. Brick pavements constructed with a ement sand bed are commonly known as emi-monolithic construction, and from this ype has developed the true brick mono- thic construction which is now being used y highway engineers. The semi-mono- thic type is the same as other brick pave- ents constructed with sand cushions, ex- ept that a mixture of sand and cement, in eneral one part Portland cement to three arts sand, is substituted for the sand ushion. It is the practice to thoroly mix hese materials dry, by machine, in the pro- portions specified. The mixture when spread out should be screeded with a templet cut to the required contour of the finished pavement. Care should be taken to get uniformity, but hand rolling is not deemed advisable, as it has been learned that a rolled cement bed does not insure a smooth wearing surface, on account of its great density. With an unrolled surface, the brick as laid is always bedded in the cement sand super-foundation. The thickness advocated in general is a minimum of ¾-inch and a maximum of 1 inch. It is my practice to wet the cement sand bed with a sprinkling can just ahead of laying the brick. Immediately preceding the grouting the brick surface should be thoroly wet.

With present methods, the semi-monolithic type of construction is better adapted to wide street construction than the monolithic. All precautions should be taken in the mixing and the application of the grout filler.

The advantages of semi-monolithic construction are that it overcomes the defects of the sand cushion by insuring rigid construction in that it practically unites the wearing surface with the concrete foundation. The cement sand cushion at all times provides a perfect bond for the full depth of the brick. This type eliminates the

shrinking which is common in a sand cushion, and at the same time eliminates the hollow or rumbling noise which is common with the sand cushion type of construction. It gives a more economical and scientific design in that it provides a stronger slab with the same material.

Brick pavements with cement sand beds were built in Baltimore as early as 1906 and adopted as that city's type of construction in 1915. The cement sand bed was used in Jacksonville in 1910 and also in connection with the paving of the ramps of the Pennsylvania Railroad terminal in New York in 1910. It has been demonstrated at the Pennsylvania terminal that shallow vitrified brick will stand up under heavy truck conditions when laid upon a cement sand bed. In this case fire clay brick 2¼ inches in depth were used, demonstrating that in many places a block of less depth than the standard block can be economically used. In the city of Syracuse a 3½-inch block was laid on a cement sand cushion on a street having railroad tracks in the center, and satisfactory results were obtained. I believe that when we lay the next pavement of this kind a 3-inch brick will be specified.

Brick Pavements with Green Concrete Foundation

This type of construction is commonly known as the monolithic type and is better adapted for highway construction up to, say, 24 feet in width or where a templet may be used to shape the entire width of road at one time. It was first used in highway construction near Paris, Ill. Proper consistency of the concrete foundation is essential for this type of construction. Care should be used in the proper spading and distributing of the concrete to prevent waves in the finished pavement due to possible difference in density. The concrete foundation is spread usually ½-inch high and formed by using a tamping templet which brings to the top a smooth mortar surface on which to bed the brick.

For this purpose there has been developed a mechanical templet which consists of a gasoline engine mounted on a cross frame with wheels, which is carried on the side forms. This power templet performs the double duty of tamping and smoothing the concrete, and in addition compresses it to better density. The templet moves at the rate of 4 feet a minute and can be adjusted to different widths. The laying of the brick wearing surface should follow closely on the concrete foundation and should be inspected, culled and rolled before the cement has its initial set. For rolling the wearing surface, a hand roller is advocated about 30 inches long, 24 inches in diameter weighing from 600 to 900 pounds. The rolling should follow immediately after the inspection, so that the grout filler may be applied at once to secure the necessary bond with concrete foundation.

In this connection the so-called wire-cut lug brick is of special value in that it develops the full strength of the slab by reason of its superior side bond, due to its



Courtesy of Dunn Wire-Cut Lug Brick Company

MONOLITHIC BRICK PAVEMENT CONSTRUCTION
Showing adhesion of wet mortar to bottom of brick

iber sides, and assures penetration of the onding material to all parts of the joints n account of its uniform lugs.

The mixing and placing of the grout filler s of the utmost importance for this type of onstruction, as in the construction of brick avements of the other types, and the same recautions must be taken in the selection f the materials and their application.

All the advantages claimed for the semi-nonolithic type of construction hold for rick pavements constructed on green con-rete foundation. In addition, there is an ncrease of slab strength due to the more erfect bond of the wearing surface and he concrete foundation. This type also liminates the use of edges in highway construction, which reduces the cost. The use of the semi-monolithic and monolithic types has tended to develop the use of paving brick of less thickness, which will result in economies, one of the most important being the saving in transportation charges. There should also be an economy in the first cost, together with a saving in actual manipulation.

In my opinion, the day of the sand cushion on rigid foundation is ended, and the satisfactory type is a cement sand cushion for village and city streets, and brick pavements for highways should be constructed on a green concrete foundation.

ACKNOWLEDGMENT.—This paper was presented at the Sixteenth Annual Convention of the American Road Builders' Association.

A Uniform System of Accounting for Cities of the Third Class in New York

By Eugene M. Travis
State Comptroller, Albany, N. Y.

NEW duties performed by the State Comptroller of New York, have as far-reaching effect in their benefit to ne people generally as those relating to the xamination of the accounts of municipali-es and of the establishment therein of uni-orm and businesslike systems of account-ng. This work is under the immediate harge of a bureau the operations of which re not directly related to the affairs of the tate but rather to those of its political sub-ivisions.

Briefly, the work of the municipal ac-ounts bureau is of a threefold nature: (1) o make examinations of the accounts and iscal affairs of municipalities; (2) to for-nulate, prescribe and install in each group uniform system of accounting; and (3) o prepare and publish statistics respecting nunicipal revenues, expenses, costs of gov-rnment and municipal indebtednesses. The jurisdiction of the bureau extends over ,510 municipalities. Excepted from its perations are the three first-class cities, New York, Buffalo and Rochester, and the counties wholly included within Greater New York.

It is safe to assume that an adequate system of accounts in a city makes available to its officials knowledge of the important facts relating to the city's operation of the cost and efficiency of its administration, and that if the accounting system be uniform and used by a number of cities, it makes possible the securing of trustworthy comparisons between cities, thereby increasing efficiency by placing a statement of the results attained by one city before the officials of others, so that all may profit by the experience of each.

The examination of the affairs of cities of the third class disclosed the following defects in existing accounting systems:

(1) The failure to disclose current liabilities in excess of available appropriations or revenues; (2) the failure to show accumulations of current liabilities which could not be liquidated by one administration and which were passed on to the succeeding administration; (3) the failure to set forth expenditures made in the absence of budgetary authorization; (4) the omission of accounts disclosing the amount of taxes and assessments due and owing the city; (5) the failure to keep any appropriate record of advances made on account of

assessable work so that the accuracy of the subsequent assessment might be insured; and (6) the failure to show in the books of account the bonded and temporary indebtedness of the city.

Those defects prompted the Comptroller to formulate and install in such cities a uniform accounting plan. At this writing it has been or is in process of being installed in 39 of the 49 cities of that class. In some of them it has been installed for a period of one year or more, and for that reason its merits or demerits have become established. That it is feasible, practicable and meritorious is fully demonstrated by experience and by numerous letters on file in the Comptroller's office. The City Auditor of one city says concerning it:

"I realize that your department is entitled to the credit primarily for the system, which gives us the opportunity to present to the Common Council of the city information in such a concise and clear form * * *.

"I have written at length in regard to this matter because of the satisfaction I know your department will feel over this marked advance in municipal financing over older methods. It remains for us to conduct the work of educating city officials and taxpayers so that their coöperation with us in making further changes suggested by your department will be assured."

The City Comptroller of another city says:

"In installing this modern system of accounting you have rendered an invaluable service to our city."

The City Chamberlain of another city says:

"I might add that when the new system gets to working smoothly I believe it will be the finest thing financially that has ever happened to the city."

The City Clerk of another city says:

"This new accounting system has proved to be very satisfactory and thru its use we are able, for the first time in the history of the city, to determine just where we stand financially."

The foregoing excerpts are given for the purpose of showing that the value of the new system is appreciated by city officers.

The system provides a standard classification of appropriations, receipts and expenditures, outlines a form of budget which will facilitate the operation of the system, and prescribes the essential accounting features thereof. It is what is technically known as an "accrual" system, and places the accounts of each city and its annual report on an accrual basis as distinguished from a cash plan. Except that accounts be kept on the accrual basis, one cannot predicate significant conclusions of any value on the information disclosed. The flow of cash in and out of the treasury is affected by so many accidental features that accounts of cash receipts and cash payments, however carefully and elaborately prepared and analyzed, cannot be safely used as a basis for determining either the revenues or the expenses of a city, or the status of its appropriation accounts, and even less can such figures be employed in making comparisons between cities.

The diversity of the financial provisions of charters of the cities of the third class made the work particularly difficult and troublesome. It was necessary to reduce such conflicting provisions to some common basis of uniformity. That this might be done, the degree of uniformity was limited to certain principles and to the acquirement of certain results rather than to any fixed and definitely prescribed method.

The classification of appropriations and expenditures is two-fold: first, by governmental functions, and, second, by object of purpose of expenditure. In this connection, standard expense accounts are established, each having a definite, well-defined meaning applicable to the conditions found to exist.

The general ledger accounts are divided into four groups: (a) current accounts, (b) assessment accounts, (c) capital and sinking fund accounts, and (d) trust accounts; each group being maintained in independent balance.

The system includes in relation to each of the four groups of accounts illustrated entries of transactions of common occurrence, and indicates how each shall be handled upon the books, and the form of balance sheet for each group.

A Study for an Illuminated Fountain

A Means of Beautifying Municipal Grounds

NUMEROUS applications have been made of the use of colored light to create various ornamental and psychological effects. Some of the most interesting examples of this kind may be found in the field of electric fountains, where the movement of water and the play of colored light are combined with very fascinating results.

The fountain was originally purely a utilitarian institution, and owing to its indispensable nature became associated with religious beliefs. Consequently, it became an object of ornament and attraction rather than a source of drinking water. It is as an object of art that it has received its greatest development in the beautification of parks.

The lighting features of an illuminated fountain are comparatively simple but capable of very wide variation. The illuminating engineer responsible for the lighting should familiarize himself with the ideas which the sculptor is attempting to create, and should choose the locations and color combinations of his light sources to harmonize with the general design. Many interesting color changes and combinations may be introduced by



ELECTRIC FOUNTAINS MAKE MUNICIPAL PARKS ATTRACTIVE BY NIGHT AND BY DAY

means of simple mechanical movements.

The illuminated fountain has been a principal feature of the Expositions of the country, and we turn to them for classic examples of fountain design. Such fountains as were found at the Chicago, Buffalo and Panama-Pacific Expositions, while very beautiful and interesting, were too elaborate and costly for the average municipal park or square and, therefore, have no place in this article.

There are a number of illuminated fountains installed in the cities of the country, but very little data appear to be available concerning their construction and operation. In this connection, the fountain described in this article and designed by the Illuminating Engineering Laboratory of the General Electric Company, Schenectady, N. Y., may prove of interest to those studying the application of the illuminated fountain to municipal parks. This fountain, while designed for a particular set of conditions, is characteristic of the general treatment and cost requirements of the average city.

The fountain consists primarily of a basin from which rises a perforated screen made of marble, concrete or polychrome terra-cotta. Located behind the screen is a stepped pyramid of metal and glass, terminated by a lantern form with a jet at its top. The water is discharged upward thru the large central jet, as well as thru thirty-six small jets placed upon the steps of the pyramid. There are sixteen small jets of water placed around the outside of the screen in the basin. The water is broken into foam and spray as it falls upon the steps and cascades into a catch-basin at the lowest step, from which it pours into the outer basin thru the mouths of sixteen gargoyles and thirty-two spouts.

The water is broken into spray in order to obtain the maximum effect from the refraction of the light. The falling water passes over glass, behind which are placed incandescent lamps to give it life and color. The perforated screen lends an effect of mystery to the cascade as seen thru its tracery; it provides a surface for the lights of the outer basin to play upon, and offers a contrast of color to the light behind. It also gives solidity to the architectural mass of the whole fountain when seen by day.

The automatic color changes take place in the cascade, inside the screen, and the tints of the jets may be varied by placing gelatin screens over the projectors which light them. These changes are hand-controlled in order that they may be made very slowly and may be changed on various nights or while the fountain is in operation if desired. The necessity for crowding many projectors within such a small area precludes the practical application of an automatic color-changing device in this ring of projectors.

Two rings of lamps in weather-proof sockets are placed inside of the cascade one for each step, and a column of lamps inside the lantern which surmounts the cascade. The lower ring contains 72 100-watt lamps, the upper ring 48 100-watt lamps and the lantern 40 100-watt lamps which are colored alternately green, pale orange and red, and wired for control by a dimmer.

In this particular installation a Gould double-suction centrifugal pump connected to a 30-horsepower, 25-cycle, 3-phase, 220-volt motor supplies the water and delivers 1,650 gallons per minute with a 50-inch head. The central jet has a 1¼-inch stream, the 36 jets on the pyramid ½-inch streams, and the 16 jets in the basin ¼-inch streams. Each separate jet has a valve to control its flow, so that any desired variation in height may be obtained. The fountain, together with its reservoir, is self-contained in that the same water is used continuously.

A reservoir for storage water is located beneath the basin and is of sufficient capacity to hold the water of the basin and five times the amount of water in the pipes, together with that rising and falling in the jets. Suitable valves are provided for draining the basin.

The framework of the pyramid and lantern is of iron, coated for protection from rust, and the glass is of sufficient density to insure complete diffusion of the light behind it.

The illuminated fountain offers unlimited possibilities to the modern city planner as a means of beautifying municipal grounds both by day and by night. It provides an interesting source of entertainment and a feature of attraction which may be utilized to advantage in many places.

Killing Caterpillars on City Street Trees

By Samuel N. Baxter
City Arboriculturist, Philadelphia

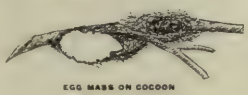
PHILADELPHIA had 127,301 street trees when a census was taken six years ago. Now the number is nearly 150,000, which is more than in any city of which there is record. To completely exterminate the tussock moth caterpillars has been impossible in the face of an inadequate appropriation and the failure of the property owners to fight the pest from within their premises and thereby prevent reinfestation of sidewalk trees which have been cleaned or sprayed.

The cleaning of trees—fences and house fronts, too, for that matter—by the removal and destruction of egg clusters is a most effective method of fighting this pest, and may be done thru the winter for the destruction of the first crop, and in July to destroy the second brood. While some egg clusters may escape the attention of the most vigilant cleaner, especially on large trees, and remain to prevent a complete extermination of the pest, yet this work faithfully performed effects noticeable results in preventing a complete defoliation of trees. Trees thus cleaned, in a neighborhood subject to reinfestation, may be spared a return of the caterpillar by placing a two- or three-inch band of "tanglefoot" around the trunk about seven feet from the ground, where it is out of the way. This should be done in May and the band renewed later in the season if necessary. Mother Tussock cannot fly, hence the effectiveness of banding.

Spraying during the feeding of caterpillars is common practice. Arsenate of lead solution is used. About 180,000 trees were cleaned, 27,000 banded and 54,000 sprayed in Philadelphia in 1917.

To encourage the aid of the public in fighting this pest, a folder was recently prepared by the Commissioners of Fairmount Park, Philadelphia, illustrating the life cycle of the caterpillar. It shows the growth of the caterpillar thru successive months, based upon the writer's observation of hatching periods in Philadelphia. These may vary in other latitudes. Appropriate monthly instructions are appended, as shown in the illustration, so that the householder may begin the fight in any month and not wait, as so many do, until an army of caterpillars invades the premises, when victory is well-nigh hopeless.

THE GROWTH *of* A CATERPILLAR AND HOW TO DESTROY IT



EGG MASS ON COCOON

JANUARY, FEBRUARY, MARCH, APRIL

Remove the frothy white egg clusters which contain three or four hundred eggs. Collect and burn them, for if merely dislodged or thrown on the ground, the eggs will hatch



HATCHING

MAY

Hatching begins. The caterpillars are about one eight inch long and difficult to discern. Spray soon after foliage matures, with three pounds of arsenate of lead paste to fifty gallons of water. Band trunks with "Tanglefoot," paste form, or wrap with sheet of fly paper to prevent fallen caterpillars from ascending tree.



HALF GROWN

JUNE

As caterpillar molts, increasing to a size more readily seen, spray again if rains have washed off the first treatment. If arsenate of lead spray is not available, the force of a solid stream of water from hose will dislodge caterpillars which cannot ascend if tree has been banded.



FULL GROWN CATERPILLAR

JULY

Kill caterpillars which are now full grown. Use a pole or clothes prop to get the high ones. Look for them under the band of tanglefoot. Destroy the cocoons which have now formed. Watch for the frothy white egg masses about an inch long, laid on top of the cocoon by the moth as she emerges. Remove and burn these egg clusters. Get *all* of them if possible.



MALE MOTH



FEMALE LAYING EGGS

AUGUST

The new eggs have hatched and another brood is on the way. Spray with arsenate of lead solution or dislodge with stream of water from hose. If tree is small, dislodge by jarring. Make sure the Tanglefoot band is intact and effective. Kill caterpillars same as in July.

SEPTEMBER

The second crop has matured and laid frothy white egg clusters. These remain dormant over winter unless an unusually warm autumn causes them to hatch as a third brood. Destroy them before dust and dirt lessens their conspicuousness.

OCTOBER, NOVEMBER, DECEMBER

Collect and burn eggs which contain next season's brood. Not an egg mass should be overlooked. Search for them not only on trees and tree guards, but under window sills, cornice, over doorways and under porch roof.

THE LIFE HISTORY OF THE CATERPILLAR

The Classification and Census of City Trees

Methods of Readily Recording the Condition of Trees

By Albert F. W. Vick

WHETHER or not the busy business man of to-day stops to indulge or even to analyze his love of nature, he is always proud to admit its existence, so well-kept trees along his city streets have become as important to him as adequate sewers or properly paved thorofares, and he is not only willing but glad to pay his pro rata tax for their maintenance. No one questions the fact that trees need scientific and systematic attention, and the problem is not so much how to plant and care for new trees as how large trees that are suffering from years of neglect may be restored to health in an economical and businesslike manner which the councils may approve.

Trees on private properties are worth whatever sentimental or artistic values their owners care to place upon them, and large sums of money have been justly expended for the preservation of single specimens. This may or may not ever be practical in municipalities. We do not see why, if public buildings such as libraries, art galleries and museums are the finest in the land, public trees should not be the best and the most carefully cared for. Certainly we are sure that the awakening of the present generation to the importance of trees has sealed the doom of the old-time "tree-butcher" and that a start in the right direction now will mean great things in the future.

In many cases cities have appointed tree wardens, who have been immediately handicapped by not having adequate working funds at their disposal. The maintenance of anything must be in proportion to its value, and the value of city trees can be determined only by the proper authorities of the city after a complete report of condition and needs of the trees have been laid before them. No city of fifty thousand inhabitants should ever expect all its old shade trees to receive proper attention on a single appropriation of one thousand dollars, for the simple reason that, including trees in parks, there is on the average at least one large tree per person in every city, and obviously two cents a tree will not even make a beginning. Tree lovers and in fact, many tree wardens, have tried t make up what they lacked in system by thei praiseworthy enthusiasm. They have ever gone before city councils and made eloquen pleas, which, when boiled down, amounte simply to this: "Our trees are indispen sable; they need treatment; let us have a the money you can give us for their care." Splendid thoughts, but lacking in all the necessary details to secure for the trees a permanent place in the budget of city ex penditures.

If a city is really desirous of preserving its trees, provision should first be made fo a comprehensive survey of all its trees otherwise much money may be spent worse than foolishly. From years of careful ob servation it has been demonstrated tha tree conditions can be definitely classified The following outline might serve as a guide in this matter, provided, of course the report is competently made.

Classification

Class A.—First-class condition, but pruning and spraying should, of course, be done when needed.

Class B.—Small defects or injuries which can be readily corrected. Treatment of this class should average not more than $1.50 o $2.00 per tree.

Class C.—Large stubs which should be re moved or small cavities which need treatment This class should average not over $5.00 o $6.00.

Class D.—Cavities of some size, or a grea deal of dead wood which should be removed This class should not exceed $10.00 or $12.0 on the average.

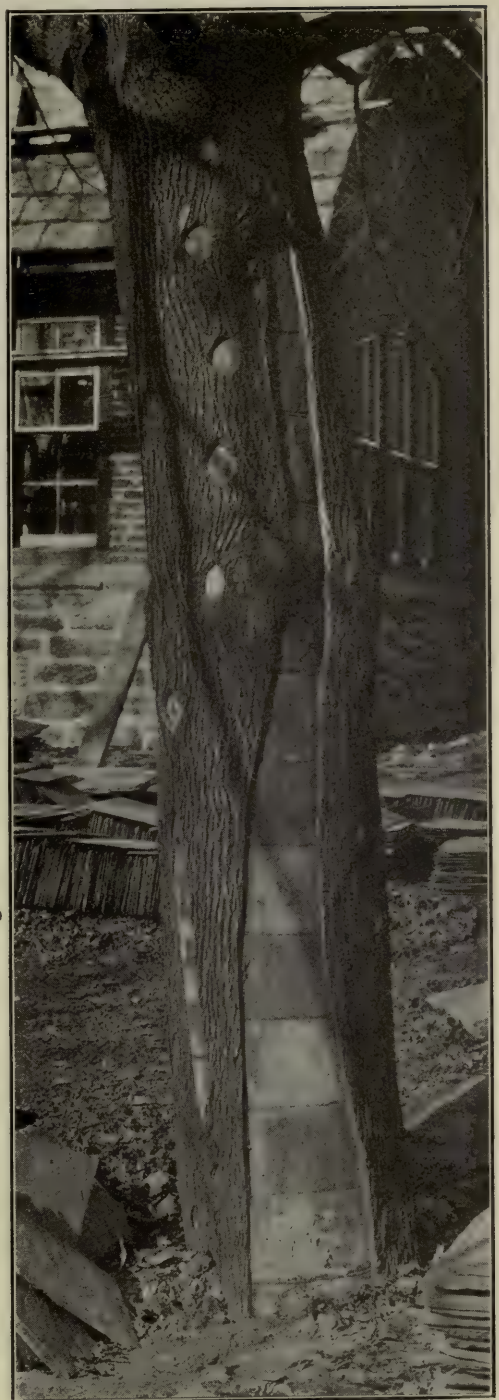
Class E.—Large cavities signifying that the tree is nearing the dangerous state. This clas should not average over $25.00.

Class F.—Extremely bad cavities. Treat ment of these trees will average from $75.0 up. Such expenditures should be considered by cities only in cases of extremely valuable or historical specimens.

Class X.—Too far gone for restoration t be at all practical from the standpoint of a community. Should be removed, as the tree is dangerous to the public and is simply a pest house breeding insects and fungi, which wil spread to the healthier trees.



HE DESTRUCTION OF A STURDY OAK LIKE THIS IS PATHETIC, AND MAY BE OBVIATED BY CAREFUL PLANNING



A STREET TREE WELL CARED FOR AND NOW IN A THRIVING CONDITION, A SOURCE OF PRIDE TO THE COMMUNITY

When a report is made by the use of such a classification, guesswork is eliminated and any city's actual tree needs are made vividly apparent.

Report

East Side		West Side	
	15th Street		
	City Line		
American Elm	B.	American Elm	B.
Sugar Maple	A.	American Elm	C.
Silver Maple	F.	American Elm	B.
American Sycamore	A.	American Sycamore	A.
American Sycamore	C.	American Sycamore	A.
American Sycamore	A.	American Sycamore	D.
	"S" Street		
Sycamore	B.	Tulip	A.
Oak	B.	Sugar Maple	C.
O. Plane	B.	O. Plane	A.

From such a report a minimum annual appropriation could be decided upon, and the work could proceed by streets and classes as directed, up to the specified amount.

Just a word about planting trees to take the place of those which are too far gone for the city to deem worth saving. One can find no better example to emulate than that set by the authorities at Washington, D. C., where a different variety of trees adorns each avenue. These trees have been planted at the proper distances apart, and with such effectiveness that much of the charm of the city is due to their ever-changing beauty. At all times, however, it should be remembered that one fine old tree contributes far more real joy to us humans and is of greater value than one hundred small trees.

Photographs by courtesy of the Davey Tree Expert Company.

Variable Power Sources Add to Dependability of Water Supply

Manchester Consistently Improves Water-Works

By R. W. Fracker
Engineer, Water-Works, Manchester, N. H.

CONSIDERABLE improvement has been made in the equipment of the water-works at Manchester, N. H., during the last three years. The city receives its water-supply from Lake Massabesic, which is four square miles in area and is four and one-half miles east of the city. There are two pumping stations,—the low service, supplying two-thirds of the city, and the high service, which supplies the remaining third.

Previous to 1916 the pumping equipment at the low-service station consisted of two reciprocating plunger pumps and one single-stage centrifugal pump. The reciprocating pumps were driven by water turbines and had a rated capacity of 5,000,000 gallons each. The centrifugal pump was driven by a 200-horse-power motor, the power for which was obtained from the Manchester Traction, Light and Power Company. In 1916 the old plunger pumps, with the turbines driving them, were replaced by a modern hydro-electric generating unit, consisting of two 250-horse-power water turbines direct-connected to a 375-kilowatt generator. A 8,000,000-gallon single-stage centrifugal pump was also added to this equipment.

At the high-service station the equipment consisted of two high-duty direct steam pumps with a displacement of 3,000,000 gallons each, a 3,000,000-gallon two-stage centrifugal pump driven by a 200-horse-power motor and one vertical, triple expansion, crank and fly-wheel, single-acting steam pump with a rated capacity of 6,000,000 gallons. In 1917 the direct steam pumps were removed and a Curtis type turbo generator set was installed. This consisted of a 1,000-kilowatt generator direct-connected to a Curtis type steam turbine. The turbine exhausts into a condenser of water-works type, and the condenser is connected to a vacuum pump.

There was also added to this equipment a 5,000,000-gallon two-stage centrifugal pump direct-connected to a 400-horse-power motor. By the use of switch boards and a transmission line the two stations have been electrically tied together. By this arrangement it is possible in times of high

water for the low-service station to supply the electricity to run the centrifugal pumps at the high station when not running its own, and in times of low water the steam turbine may be started at the high-service station and power generated for both stations. Power may also be obtained for either station from the Manchester Traction, Light and Power Company. With the present equipment the city is well insured against water famine.

For the last five years during the winter a force of men has been employed cutting off the hard wood around the lake and thinning out the pine trees where necessary. After cutting, the vacant places have been set with pine seedlings. In all, 400,000 seedlings have been set to date.

There are a number of bogs around the lake, and it is the intention of the Commissioners to have these bogs reclaimed when the finances of the water-works are sufficient. One bog south of the high-service station has already been reclaimed by the building of a concrete wall on the shore of the lake and filling in behind the wall. Another bog north of the same station was surveyed in 1917, and an estimate of $82,073.60 was submitted for the building of a concrete retaining wall and the filling back of the wall above the high-water line of the lake. Owing to the high cost of material and labor, this work will not be taken up until some future date.

Army-Trained Health Officers for Cities

By A. W. Hedrich

Editor, The American Journal of Public Health

IN former wars disease caused as high as 75 per cent of the deaths among soldiers, the enemy killing only about 25 per cent. It is a fact that many of the ancient wars came to an end not because the armies were defeated, but because they were nearly wiped out by disease.

In the present war with Germany, however, disease caused only 30 per cent of the deaths in the American Expeditionary Forces. This tremendous reduction in deaths from disease came because the Army Medical Corps had experts who examined and either treated or discharged men who were sick with tuberculosis; they prevented the soldiers from contracting those scourges of war, the venereal diseases; they provided for proper water supply, sewage and garbage disposal; when diphtheria and scarlet fever or other communicable diseases broke out, they quarantined patients.

These well-trained men who have protected the health and lives of our soldiers are now becoming available for work in civil communities as health officers, school medical inspectors, sanitary engineers, industrial hygienists, laboratory men, etc.

We are just recovering from an influenza epidemic which killed over 400,000 in the United States—more than ten times as many as were killed in our army in France. Furthermore, as Evans and Heckard point out in *The American Journal of Public Health* for November, 1918, it is not unlikely that we shall have a severe recurrence next winter. In the great influenza epidemic of 1890, the second year was even more severe than the first.

Now is the time to mobilize your community against disease. If you have no full-time health officer, or if your health department, school or factory needs more adequate health supervision, you can get in touch with these well-trained men returning from the war by writing to the American Public Health Association at Boston, Mass. This association is conducting a free Health Employment Bureau and upon request will furnish you with a list of candidates, together with statements of their qualifications. In writing, state the character of the position and be sure to make a statement as to the salary, if only approximate.

The Medical Department of the army includes medical and non-medical men who are well trained for positions in public health. Mr. Mayor, Mr. Commercial Secretary, and Mr. Health Officer: Here is a chance to take a step in the direction of a healthier city, as well as to show your appreciation of the men who entered the war service in order to protect the health of our boys.

Publicity in Water Waste Prevention Work

The News Value of Appeals in Public Press

WHEN a municipality undertakes to reduce the waste of water, the usual practice involves the discovery and stoppage of leaks, both in street mains and in plumbing and water fixtures within the buildings, the various methods adopted depending upon the local conditions. Such efforts may or may not be supplemented by a publicity campaign. If such campaign is undertaken, the public press affords the easiest means of communication between the water department and the consumer. Such an avenue of communication is open, however, only when the water situation is such as to give a news value to the articles that may be published.

When there is danger of serious shortage in the water supply if waste be not curtailed, then the press will actively support the water department in its effort to warn the consumers. Where the saving of waste is purely an economic question, the press shows but scant interest. The water department always has available the circularization of its consumers. This can be accomplished either by a special bulletin, or series of bulletins, delivered to the consumers, or by notices attached to the water bills. Both circulars and notices on bills may be effectively employed.

The subject and form of the appeal are both important. The reasons set forth why consumers should reduce waste vary, the more usual reasons being:

a. To avoid a shortage in the supply or a "water famine"

b. To save labor, fuel and other operating expenses where pumping is necessary

c. To postpone the construction of new supply and delivery works

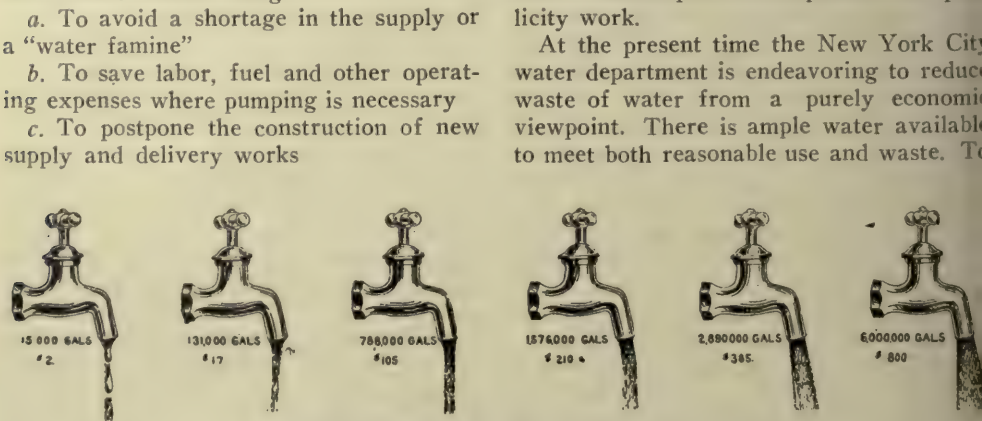
d. To increase pressures thru reductio in frictional losses

By carefully selecting the points whic most strongly appeal to the audience to b addressed, and by presenting these point tersely, the appeal will be made to strik home most effectively. Illustrations are great aid in attracting the attention of th consumer and securing his consideration o the printed matter presented to him.

Publicity is essentially educational. It object is to inform the group addressed o facts with which they are either unfamilia or to which they have failed to give suf ficient attention. The water departmen furnishes an absolutely essential daily nee for each person in the community. A members of the community should have re liable information in reference to the wate supply and be interested therein.

The actual reduction in consumption o water which is accomplished thru a pub licity campaign is usually small, excep where it is anticipated that a serious short age of water will result if waste be no checked. In 1910-1911, in the boroughs o Manhattan and The Bronx, such a condi tion threatened, and a publicity campaign which was vigorously pressed, netted a sav ing which has been estimated at some 25, 000,000 gallons daily. This, however, is th most striking instance in the history of th New York water-supply, of a direct reduc tion in consumption accomplished thru pub licity work.

At the present time the New York Cit water department is endeavoring to reduc waste of water from a purely economi viewpoint. There is ample water availabl to meet both reasonable use and waste. T



A GRAPHIC METHOD OF SHOWING WATER WASTE

The figures beneath the taps show the number of gallons wasted and the annual cost at current rates

urnish such water it must be pumped at a ost of approximately $25 per million gal- ons. The method adopted to curtail waste s that of house-to-house inspection to lo- ate and stop plumbing leaks. It is esti- nated that there are nearly half a million f such leaks within Greater New York, nd that, thru the employment on this work f some 100 inspectors daily, all premises an be examined once a year and waste hecked that would otherwise amount to ome 60,000,000 gallons daily. The pub- licity side of this work consists in deliver- ing a circular to each family. At least a million of these circulars are to be dis- tributed by the inspectors as they examine the various premises. It is also proposed to deliver a circular with each water bill. In this way the citizens of New York will be informed of the reason for undertaking a water waste prevention campaign, and their coöperation in securing the desired results will be quickened.

ACKNOWLEDGMENT.—From *Journal of the American Water Works Association*, March, 1919.

An Interallied Architectural Competition—A Model City to be Built

By Preston Hersey

UNDER the auspices and with the collaboration of La Renaissance des Cités, a French social betterment society working under a subvention from the French Government, with offices at 23, rue Louis-le-Grande, Paris, the city of Chauny, department of the Aisne, has opened an interallied competition for improving the arrangement and extension of the city and its suburbs under the most modern conditions.

The competition has been opened since the first of February, 1919, and will definitely close the 31st of May, 1919. Upon deposit of 30 francs the terms under which the competition is held, written in French and including the plans of the city and pamphlets discussing its economic position, will be sent to the applicant.

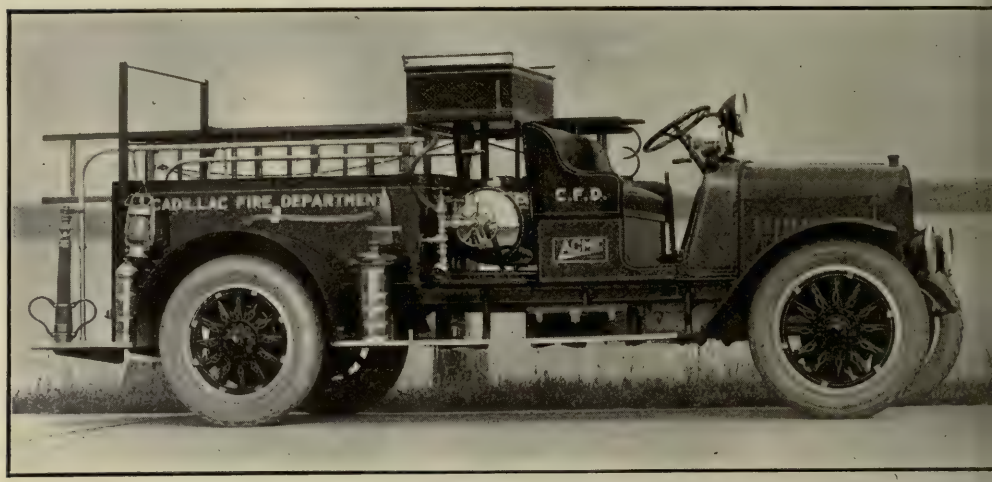
This amount is used only as a guarantee to the applicant and will be remitted upon receipt of his plans or article. The result of the competition will be announced on the 5th of June, 1919. A first prize of 10,000 francs, a second prize of 5,000 francs, a third prize of 3,000 francs and a fourth prize of 2,000 francs will be awarded. Further prices of 1,000, 500, 300 and 200 francs will be distributed for the article best describing methods and means for the reorganization of the social and economic life of the city. At the conclusion of the competition a large exhibition will be held at Paris, where the plans of the foremost competitors will be shown.

A general commission formed by the municipality of Chauny has appointed a jury which has as its president M. Louis Bonnyer, architect for the city of Paris; as vice-presidents, M. leProf. Gariel, vice-president of the Council of Public Hygiene for France, and M. Jaussely, architect for the plans for the extension of the city of Barcelona, Spain. Four additional members of the jury are to be later designated by the general commission of the city of Chauny, and four members, architects, engineers and hygienists, are to be designated by the competitors.

Inasmuch as the competition is open to any representative of the interallied nations and is held under the auspices of an important private organization in France, the center for various authoritative commissions occupied in research work and study relating to the reconstruction and rehabilitation of the devastated regions, the competition is of the utmost interest to individual architects, city planners, engineers, and the innumerable organizations and institutions having to do with the study of the modern development of a municipality.

Before the outbreak of the war Chauny was a prosperous and thriving industrial city of 11,000. It was the representative city of France, with all the natural richness of its location in the valley of the Oise and the limitless ambitions of its inhabitants. Because of its location and the almost complete devastation which now exists, it offers perfect facility for a practical demonstration of economical progress,

For Hauling, Sprinkling and Fire Protection the Motor Truck Stands Ready to Serve



THE CADILLAC, MICH., FIRE DEPARTMENT USES THIS ACME TRUCK IN SPEEDILY CHECKING FIRES



A ¾-TON GMC FIRE TRUCK "READY TO SERVE" IN NORTH ANDOVER, MASS.



THE MOTOR TRUCK IS AMPHIBIOUS AND STURDY

In some recent work at Sparrow's Point, Md., it was decided to use the material from some extended excavation to fill the low and submerged areas nearby. Rails were put down and small dump cars were employed, but soon it became apparent that the cost of tearing up the rails to reach each new dumping point was prohibitive. A fleet of five 5-ton White power dumping trucks and three steam shovels was quickly put to work, and the cost was just as quickly cut in half. In spite of the fact that the ground was covered with twelve to fifteen inches of soft, black mud, the trucks were able to move their loads faster than the dump cars, and they had the further advantage of being able to deposit their loads in fifteen or twenty different places without waiting for the tracks to be moved. For several weeks the trucks were successfully operated in water up to the hubs.



A SPRINKLER FLUSHER MOUNTED ON A CLYDESDALE TRUCK KEEPS THE DUST LAID IN JANESVILLE, WIS.

Chamber of Commerce Buildings—Their Uses and Possibilities

The Third Instalment of a Series of Items on the Homes of Commercial Organizations, with Descriptions of Their Club Facilities and Their Uses as Community Centers

Fortunate indeed is the community that has a progressive commercial organization—one that does not feel that its responsibility ends with the successful commercial development of the city, but realizes that an equally important function is the unification of the city's social forces. The natural center from which to conduct such activities is the chamber of commerce, whose building should be large enough to house also such organizations as the farm bureau and the patriotic societies, and should contain rooms equipped for the holding of group meetings and for social purposes, a dining-room, and a well-ventilated auditorium for large assemblages. The prospective passing of the saloon will call for greatly renewed activity in the way of establishing social centers for men.

DULUTH, MINN.—The Duluth Commercial Club occupies the three-story-and-basement building pictured herewith. Its quarters cover 210,000 square feet, divided as follows: the Secretary's office, the general office, the office of the traffic department, private dining-rooms, two main dining-rooms, the kitchen, the coat check room, the storeroom, the printing room, the billiard-room, the card room, the assembly-room, the ladies' parlor, the reading-room and fifteen living-rooms.

The Commercial Club does not own the building, which was erected for the Club on condition of its giving a lease for a long term of years. The building is known as the Commercial Building, and is occupied by the Commercial Club virtually as owner. The actual owners rent the ground floor for its offices.

No organizations closely allied with the work of the Commercial Club are housed in the building. Various civic organizations avail themselves of the dining-room service, for which regular prices are charged. No charge is made for the use of the assembly-room. The Club derives its revenue from the individual and sustaining membership dues, the receipts from departmental activities and the rental from the fifteen rooms which are available to a limited numb of the members for living quarters.

The building provides the facilities for a very plea ant social life among the members, with its billiard cards, dances, dining service, and living quarters. is used to a very large extent as a community cente practically exclusively for such features as are co sistent with the work of the organization; the dinin rooms and the assembly-room make it possible to ho meetings and social gatherings of infinite variety. regular entertainment fund is maintained. The mon required for entertainment is appropriated as the occ sions present themselves.

◆❖◆

DAVENPORT, IOWA.—The building occupied by t Davenport Commercial Club was erected at a cost $60,000, including $12,500 paid for the lot. Abo $10,000 more was spent for the furniture. T project was financed by the formation of a stock co pany known as the Club House Building Compan which is entirely independent of the Commercial Clu The Commercial Club purchases stock of the buildi company from time to time and expects eventually



THE HOME OF THE DULUTH COMMERCIAL CLUB

cquire all the stock now held y the Club House Building Company. Members who own tock do not lose their equity when they cease to be members f the Commercial Club.

The Club occupies a total f 24,600 square feet of space. n the basement are the grill oom, the billiard- and pool-ooms, the steward's office, and he storeroom, laundries, etc. On the first floor are the general office, the General Secretary's private office, another arge office, the reading-room, ie ladies' parlor and the men's loak room. On the second oor are the kitchen, the two ooms occupied by the restauant, a private dining-room, ie directors' room, and the adies' cloak room.

The building houses the folowing bureaus and affiliated rganizations besides its own: ie Greater Davenport Committee, the Davenport Industrial Investment Company, the cott County Farm Improvement League, the Advertisers' lub, Manufacturers' Local o. 1, the Davenport Rating ssociation, the Traffic Bureau, ie Retail Merchants' Bureau, ie Charities and Advertisers' ureau, the Convention Bureau, and the Association of Life Underwriters. They o not pay for their accommodations; in fact, no portion of the building is rented. The Commercial Club's ain sources of revenue are the membership dues and ie receipts from the restaurant.

The reading-rooms, the billiard- and pool-rooms and ie restaurant afford adequate facilities for the social nd club life of the members. The building serves ie city as a community center in many ways. Practically all meetings of every kind that have as their asis the welfare of the community are held in the ommercial Club. In order to facilitate and expedite the work of the regular and temporary organizaons using the rooms, the Club devotes special attenon to its noon luncheon and encourages the holding f meetings at the luncheon hour. The Club has a ompetent steward, a chef, adequate kitchen facilities nd dining-rooms, and has had splendid success in eveloping this method of securing results. An verage of from 150 to 175 members of the Club take uncheon there daily, about 50 per cent of whom re there to discuss some specific business or comunity proposition.



THE DAVENPORT, IOWA, COMMERCIAL CLUB BUILDING

The building does not contain any assembly hall or auditorium, but the large dining-rooms are easily convertible into an auditorium.

An allowance is made every year in the budget of the Commercial Club for all forms of entertainment.

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AUBURN, N. Y.—In February of this year the Auburn Chamber of Commerce purchased the handsome building formerly owned and occupied by the City Club. A referendum on the subject of purchasing the building was submitted to the Chamber's members, 678 of whom voted for and 118 against the proposition. The structure has been remodeled somewhat to adapt it to the Chamber's work, and a housewarming will take place in the new building early this month.

The building was erected in 1904 at a cost of $35,000, and the land is valued at $25,000. The Chamber of Commerce is paying only $32,750 for the building and site, however, which is the bonded indebtedness on the property, inherited from the City Club. The building was purchased fully equipped. A $5,000 cash payment was made, and the Chamber assumed liability for 6 per cent debenture bonds amounting to $5,000 that will mature in January, 1923; first mortgage 5 per cent bonds amounting to $20,250 that will mature in January, 1924; and second mortgage 5 per cent coupon bonds amounting to $2,500 that will mature in January, 1925. The City Club refused other offers of several thousand dollars more for the property than the sum at which it was sold to the Chamber of Commerce, because of the benefit which the Club considered it would be to the community to have the Chamber occupy the building.

The building contains approximately 5,800 square feet of floor space, divided into eighteen rooms. On the first floor, on the front, are four rooms that are used as the Chamber of Commerce offices. An interior lobby on that floor contains the switchboard, the cigar stand, and the automobile and general informa-



ONE OF THE DINING-ROOMS IN THE DAVENPORT COMMERCIAL CLUB BUILDING



THE BUILDING IN WHICH THE AUBURN CHAMBER OF COMMERCE IS HOUSED

papers, the current magazin telephone booths, etc., provid the members with the faciliti for a pleasant social life in t building.

The Chamber's larger co mittee room seats 30 peop the Directors' room about and the reading-room on t ground floor about 200. The rooms are used by the follo ing organizations for meetin of all kinds: the Metropolit Terminal Development Co mission of Providence, t Traffic Club of the Chamb of Commerce, the Juni Chamber of Commerce, t Chamber's War Council, t Metropolitan Housing Assoc tion, the New England Hig ways Return Loads Assoc tion, the Providence Tru Owners' Association, and t Providence Cotton Buye Association. No charge made except for janitor s vice, lights, etc. The Chamb of Commerce coöperates various ways in a large p portion of the public ent prises having the welfare Providence and Rhode Isla for their object, and con

tion booth. Back of this lobby is a large reading- and writing-room, which is also the general lounging- and meeting-place for the members. There is a handsome restaurant in the basement where a noon luncheon is to be served daily, and group dinners in the evening. The restaurant is completely equipped with a modern kitchen, pantries and a refrigerating room, and the dining-room will accommodate 150 people. On the second floor are three rooms which will be used for meetings. By opening swinging doors between, these three rooms can be converted into one large room capable of seating 350 people.

In the rear of the building is a brick structure that was formerly used as a bowling-alley, in which the Chamber of Commerce intends to establish a permanent manufacturers' exhibit.

The Chamber of Commerce occupies the entire building at present. It is proposed in the near future, however, to accommodate the Farm Bureau, the Associated Charities, the Automobile Club, and a dozen or more other affiliated organizations which will use the committee and assembly rooms for their meetings. Of these, the Farm Bureau will probably pay for its accommodations.

Social and club facilities for the members are provided by the restaurant, the reading-, writing- and lounging-room, and the pool- and billiard-room. The Chamber does not at present maintain an entertainment fund.

◆❖◆

Providence, R. I.—The Providence Chamber of Commerce occupies the basement, the first floor and a portion of the third floor of the three-story building illustrated herewith, representing about 6,500 square feet of space. In this space are the private offices of the General Secretary, the Assistant to the General Secretary, the Traffic Manager, and the Secretary of the Retail Merchants' Division, each of which is approached thru separate anterooms which accommodate their respective staffs of stenographers and clerks; the Directors' room, two committee rooms, a very large room for reading, writing, lounging, and to accommodate those persons making use of the Chamber's quotation boards, and a storeroom.

The Chamber does not operate a restaurant, but the reading-, writing- and lounging-room, which contains a reference library and is well supplied with daily news-

quently the building is the center of much commun activity. No regular entertainment fund is ma tained; each occasion is financed separately, except the cases of conventions, and an appropriation made annually for the use of the Chamber's Conv tion Committee.

The building was erected in 1771, and it is the fore not possible to give the cost of it. The first t stories were erected at that time by the Colony Rhode Island to be used as a market house. T third story was added in the following century a was occupied as a Free Masons' Hall. The city Providence subsequently took possession of the bui ing and converted it into a City Hall, for which p pose it was used until the present City Hall of Pro dence was completed, in November, 1878. The c then moved its offices into the new municipal buildi and the Providence Board of Trade secured t premises, subletting the upper floors for busin offices, and that arrangement still continues.

The city of Providence still owns the structure a leases it to the Chamber of Commerce. The dues the members are the Chamber's principal source revenue.



THE HISTORICAL BUILDING OCCUPIED BY THE PROVIDEN CHAMBER OF COMMERCE

News and Ideas for Commercial and Civic Organizations

London Civic Float a Suggestion for Victory Loan Campaign

London, Ont.—The last Liberty loan ampaign was in progress in Canada when ie announcement of the signing of the rmistice came, and London celebrated the ccasion by a parade in which all the civic rganizations were represented. One of ie contributions of the Board of Trade to iis function was the float pictured in the ccompanying illustration. It showed the eorganized Board of Trade (the present hamber of Commerce) as the keystone of ie arch, the supporting pillars being in-ustry and agriculture. The intervening locks making up the arch represent labor, apital, retail and wholesale business, iurches, schools, financial and other insti-itions—all the lines of activity that go to iake up city life. The platform was di-ided into four parts, showing industry rep-esented by an operating acetylene welding utfit, agriculture by farm products, the home by a kitchen scene with electrical equipment, and education by a reproduction of a schoolroom.

GORDON PHILIP,
Managing Secretary, London Chamber of Commerce.

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How the Albany Chamber Gets Behind Government Loans

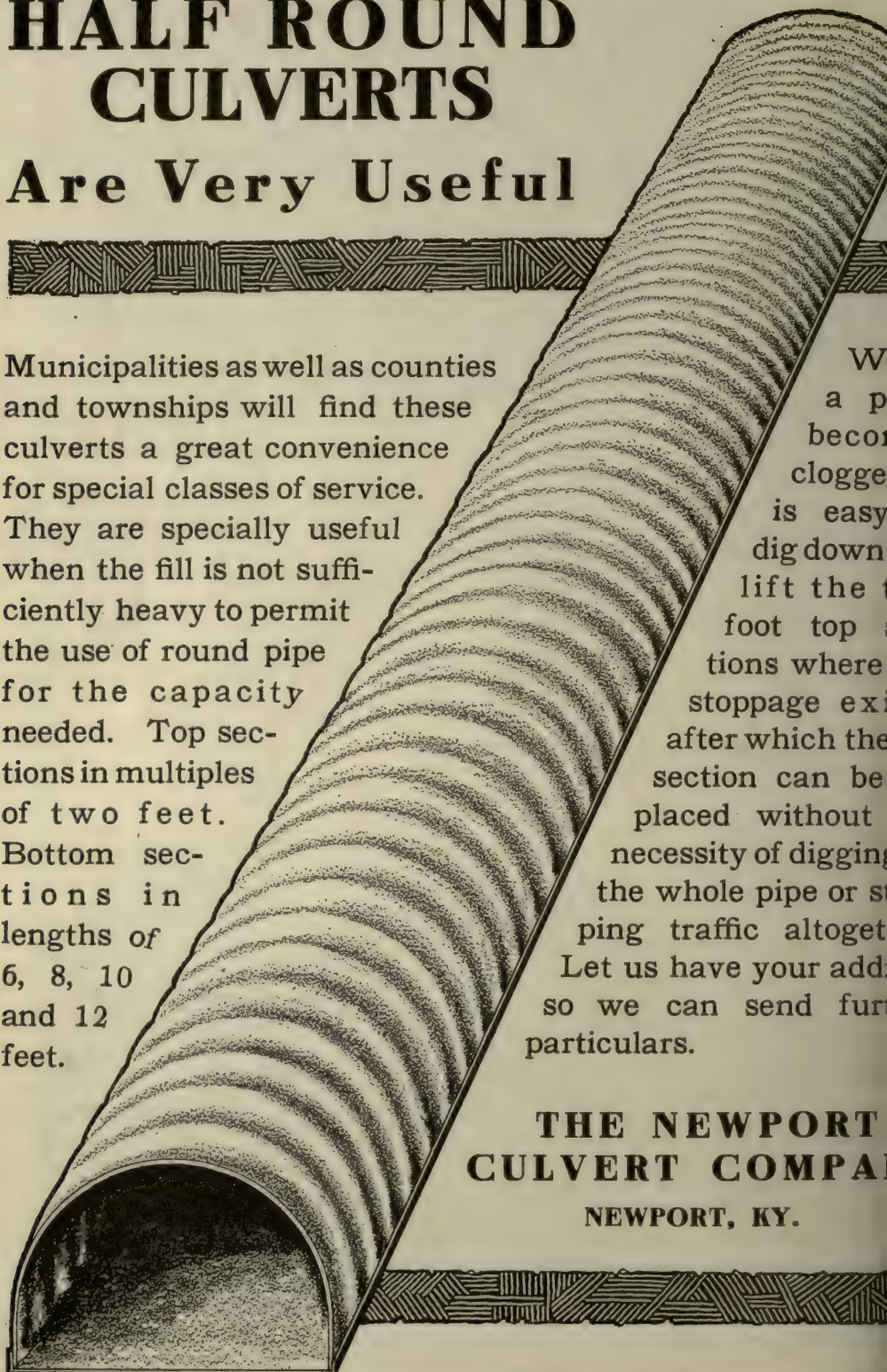
Albany, N. Y.—In the coming Victory Loan drive, which is scheduled to begin on April 21 and continue thru May 10, the Government will require the same hearty coöperation from the commercial organizations of the country that they gave during the four previous campaigns. At any rate, the Albany Chamber expects to get under its share of the burden. The vigor with which it aided the campaign for the Fourth Liberty Loan in its community is illustrated in the accompanying picture, which was taken at noon during one of the mass meetings held daily between twelve



THE FLOAT OF THE LONDON, ONT., BOARD OF TRADE, TYPIFYING ITS EFFORT TO BUILD A BETTER CITY FOR THE RETURNING MEN

HALF ROUND CULVERTS

Are Very Useful



Municipalities as well as counties and townships will find these culverts a great convenience for special classes of service. They are specially useful when the fill is not sufficiently heavy to permit the use of round pipe for the capacity needed. Top sections in multiples of two feet. Bottom sections in lengths of 6, 8, 10 and 12 feet.

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Let us have your add
so we can send fur
particulars.

THE NEWPORT CULVERT COMPA

NEWPORT, KY.



THE CROWD THAT GATHERED IN FRONT OF THE ALBANY CHAMBER OF COMMERCE OFFICES EVERY DAY DURING THE FOURTH LIBERTY LOAN CAMPAIGN

one o'clock in front of the Ten Eyck ding, in which the Chamber of Comce has its offices. This was a typical n crowd, and Governor Charles S. itman, who was an active member of the mber and one of its committee chair-, was on one of the platforms acting special bond salesman. On this parlar day he sold over $600,000 worth of ds from that platform.

he Albany Chamber of Commerce was only the headquarters for the Albany campaign, in which it sold more than 000,000 worth of bonds, but was also headquarters for the entire fifth district, ch included the eastern part of New k State excepting the metropolitan dist, and extended from the Pennsylvania e line up thru Middletown and the Hud- Valley, to the Canadian line. The daily orts for the fifth district and Albany nty were made at the corner shown in picture, and some interesting special ertainment features were staged in front he Chamber of Commerce offices. One the Chamber borrowed six diving girls m a local theater, which had its tank cted at this spot. The entertainment atcted such an enormous crowd that all ffic was stopped for nearly an hour, and sale of the bonds was greatly stimulated. here is certainly no more vital activity a Chamber of Commerce than a Governnt loan campaign, and nothing more rth while.

ROY S. SMITH,
xecutive Manager, Albany Chamber of Commerce.

The Speakers' Bureau of the Flint Board of Commerce

FLINT, MICH.—Several months ago the Flint Board of Commerce organized a Speakers' Bureau, the specific purpose of which is to supply speakers on communuity problems. The splendid results obtained have more than justified the time and energy expended in developing this kind of community service. The Bureau has already furnished speakers for over one hundred out-of-town meetings. The object in sending these men into other communities to speak was not primarily to boost Flint, altho it has been the means of securing some effective advertising for the city, but rather to point out the value of coöperation in promoting the growth, prosperity and civic pride of any city. The members of the speaking staff are business and professional men who have taken an active part in the civic and social activities of Flint during the brief period in which it has grown from 15,000 to over 100,000 population. A city which has attained such growth since 1900 has had to meet and solve many problems. Each of the speakers has specialized in one or more of these problems, and is therefore in a position to deliver a really helpful message to those who are confronted with such problems as arise when cities experience rapid or unexpected growth from one cause or another.

The Bureau's speakers stress the fact that Flint's growth has been due almost entirely to the hearty coöperation of her citizens as



Tarvia
Preserves Roads
Prevents Dust

West Seventh Street, Plainfield
Treated annually since 1912

After hard service—

Note smooth, mudless, easy-traction surface

IN 1912 the old water-bound macadam on this road was coated with "Tarvia-B." Once a year since then a light coat of "Tarvia-B" has been used for upkeep.

After six years of this inexpensive care, behold a surface smooth enough for roller-skates and "skatemobiles," despite the fact that this is the main automobile-artery out of Plainfield toward the south and carries a fast and heavy traffic serving a wealthy residential region.

The cost per year over the six years has been under 3 cents per yard.

That is less than plain macadam would have cost under this traffic, and a plain macadam would not stand one season under like conditions.

Do *your* roads look like this after and tear of a hard winter?

Tarvia is a coal-tar preparation structing new macadam roads a ing old ones.

It reenforces the road-surface and water-proof, mudless, dustless, *mobile-proof*.

Tarvia offers the most satisfacto the same time the cheapest form maintenance yet invented.

Special Service Departm

This company has a corps of trained e chemists who have given years of study road problems. The advice of these m had for the asking by any one interested. write to the nearest office regarding road p conditions in your vicinity, the matter will attention.

Illustrated booklets free upon request. Address nearest office.

New York Chicago Philadelphia **The Barrett Company** Boston St. Louis
Cleveland Cincinnati Pittsburgh Detroit Birmingham
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ole, and to the vision and unselfish ser- of her leading manufacturers, bankers, shers, merchants and professional men rticular, rather than to the development r natural resources. They also explain plan of organization and the method policy that have been adopted in Flint eate this spirit of coöperation, and how may be utilized to stimulate the th, prosperity and well-being of a city. fact that the speakers have been in touch with Flint's marvelous growth es them to speak practically as well as etically on such vital social problems e following: Housing, the Boy Scouts, City's Dental Clinic, Field Days, Per- Service, Community Team Work, n-up Campaigns, City Forestry, Engi- ng Problems, Civic Spirit, School Sur- Americanization, Recreation, the In- ial Fellowship League, Successful d of Commerce Methods, Civic Recog- n, Municipal Improvements, Health and ation, Vehicle Workers' Club Activi- etc.

outgrowth of the Speakers' Bureau is rse in public speaking for business and ssional men that has recently been or- ed. Fifty enthusiastic men have en- l for this course. The students are as- d subjects that relate to community or ess activities, and each student is re- d to speak for a few minutes at each on. The course not only develops ers, but greatly stimulates the students' est in social and commercial problems. men who have enrolled in this class found it intensely interesting and y beneficial. There is nothing technical t the course or the methods used in teaching men to speak with force before large audiences. The sessions are held in churches, halls, club rooms and other such gathering places, to accustom the students to different surroundings and conditions.

The Speakers' Bureau has proved an unqualified success. It is a service that any progressive community can adopt with profit to itself and to the surrounding country. If several cities within a reasonable distance of each other would organize speakers' bureaus, the exchange of ideas thru this medium would soon develop "a mental hospitality" highly beneficial to all.

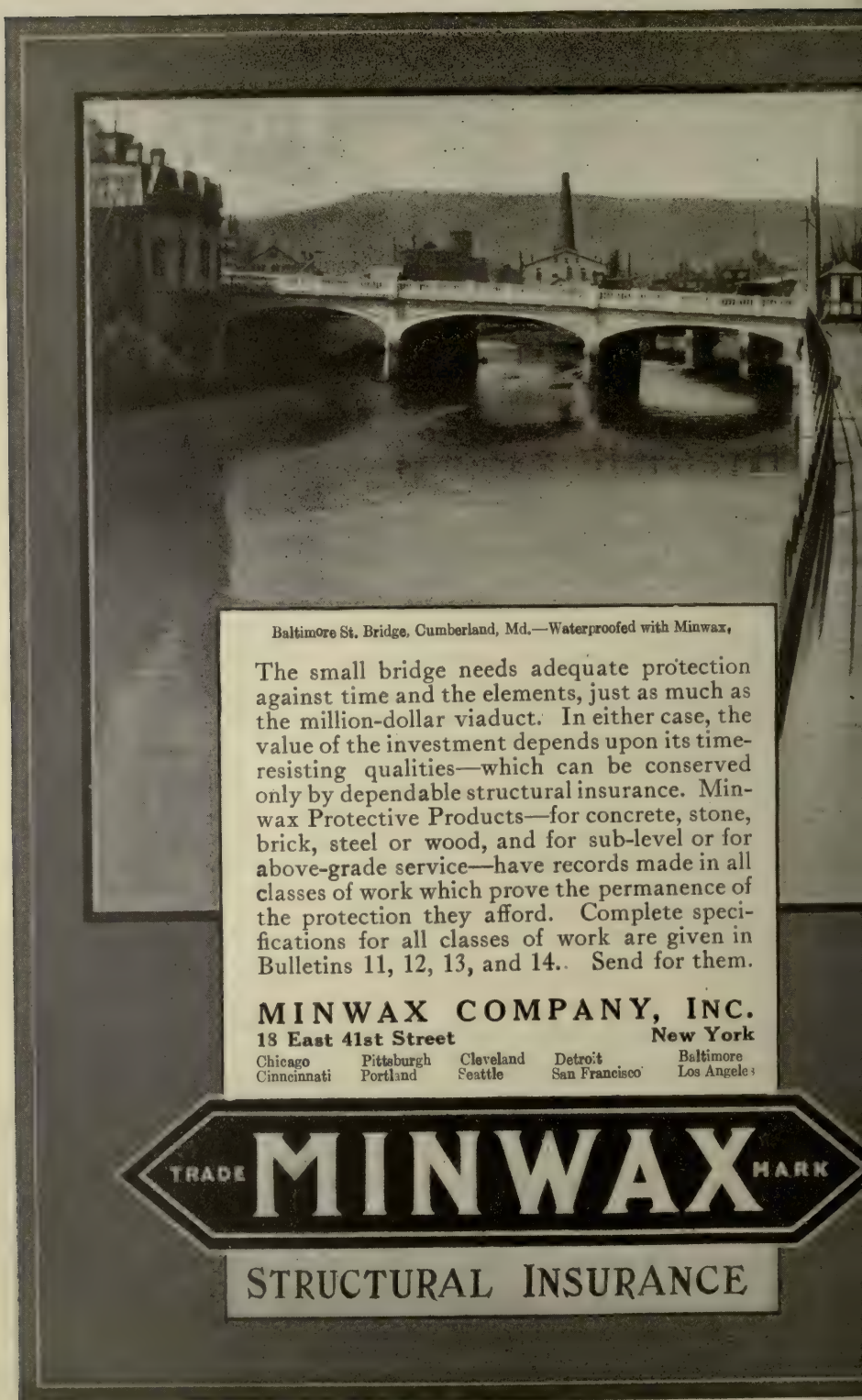
DANIEL A. REED,
Managing Director, Flint Board of Commerce.

Boys as Special Police Officers In Clean-Up Campaign

HOQUIAM, WASH.—The Hoquiam Commercial Club will conduct the clean-up campaign in the city this year as formerly. The operation starts with the organization of the city into about sixty districts of from two to four blocks each. Then the club issues a call thru the schools for as many boys between the ages of 10 and 14 years as there are districts, who are to act as special police officers for the week of the clean-up campaign. These boys register during the previous week and each is assigned a district. On the Saturday before the campaign starts, they all report at the club rooms, where they are sworn in by the Mayor and the City Clerk as special police officers for the clean-up work, and are presented with memorandum books in which they are asked to make records of all the places they visit and of the condi-



IE SPECIAL POLICE OFFICERS AND INSPECTORS IN HOQUIAM'S CLEAN-UP CAMPAIGN



Baltimore St. Bridge, Cumberland, Md.—Waterproofed with Minwax,

The small bridge needs adequate protection against time and the elements, just as much as the million-dollar viaduct. In either case, the value of the investment depends upon its time-resisting qualities—which can be conserved only by dependable structural insurance. Minwax Protective Products—for concrete, stone, brick, steel or wood, and for sub-level or for above-grade service—have records made in all classes of work which prove the permanence of the protection they afford. Complete specifications for all classes of work are given in Bulletins 11, 12, 13, and 14. Send for them.

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n of the grounds, and report how they re received and what the people agree do toward making Hoquiam a cleaner y. Each is also given a "Special Police" dge and a small tin star. Either the Sec- ary of the Commercial Club or the airman of the committee having the work charge, gives them a little talk in which tells them what will be expected of them. e Chief of Police also talks to them out being courteous and yet efficient, and e boys then start out on their work, each his own district.

Twice during the week they report to the mmercial Club upon their progress. The operty is supposed to be cleaned up by e residents themselves. Each boy makes complete round of his district three or ur times during the week; and as he finds at the place has been cleaned up and put good condition, he marks off that name his book. At the close of the campaign, e books are turned in to the Commercial ub, where they are checked up, and the mes of the property owners on whose ounds the refuse, garbage or other litter s not been cleaned up, are turned in to e sanitary department of the city for its tention. By the end of the week the en- e city has been covered and a complete cord has been obtained of the unsanitary ices. These are attended to promptly the regular city force.

The idea of being special police officers r a whole week, with full power, has oved a very effective one for obtaining ys for this work, and they have not been own to abuse their authority in the three ars that this plan has been in force. The companying picture shows the boys as- mbled in front of the Commercial Club ady to start on their week's work.

WALTER B. SLADE,
Managing Secretary, Hoquiam Commercial Club.

New Bulletins

BALTIMORE, MD.—*City and State,* a Mary- id journal of civic and social progress, pub- hed monthly by the Baltimore Alliance and e Woman's Civic League.

BARTLESVILLE, OKLA.—*Greater Bartlesville,* e official bulletin of the Bartlesville Cham- r of Commerce.

BRISTOL, VA., TENN.—*The Bristol Magazine,* blished monthly by the Bristol Chamber of mmerce.

DALLAS, TEX.—*Bulletin* of the Dallas Cham- r of Commerce and Manufacturers' Asso- tion.

FALL RIVER, MASS.—*Action,* issued monthly by the Fall River Chamber of Commerce.

GUELPH, ONT.—*Greater Guelph,* the official bulletin of the Guelph Chamber of Commerce.

HOUSTON, TEX.—*Houston,* the official organ of the Young Men's Business League. Published monthly.

NEW CASTLE, PA.—*Board of Trade,* confidential bulletin to members issued by the New Castle Board of Trade.

TERRE HAUTE, IND.—*The Bulletin,* published monthly by the Terre Haute Chamber of Commerce.

WASHINGTON, D. C.—*Civic Comment,* a clipping sheet to be issued occasionally by the American Civic Association, Union Trust Building, Washington, D. C.

WINNIPEG, MAN.—*Winnipeg Community Builder,* the official publication of the Winnipeg Board of Trade.

Recently Issued Printed Matter

DALLAS, TEX.—A pamphlet entitled "Dallas, Financial, Industrial, and Educational Center Great Southwest," and containing "dependable information" about Dallas, has been issued by the Chamber of Commerce and Manufacturers' Association.

JANESVILLE, WIS.—The Janesville Chamber of Commerce housing plan is described in a booklet recently issued by that organization.

JOHNSTOWN, PA.—"The Drama of Johnstown" is related in a booklet published by the Johnstown Chamber of Commerce, entitled "Johnstown, Its Might and Merit."

MINNEAPOLIS, MINN.—"A Proposed Act to Create a Board of Estimate and Taxation for Minneapolis" has been published in pamphlet form by the Minneapolis Civic and Commerce Association.

NEW YORK CITY.—The report of the Special Committee on Government Ownership and Operation of Public Utilities of the Merchants' Association has been published in booklet form by that Association.

NEW YORK STATE.—The proceedings of the midwinter conference of the New York State Commercial Organization Secretaries, held at Syracuse, N. Y., Jan. 24-25, 1919, have been published. Acting Secretary, Ross W. Kellogg, Secretary of the Board of Commerce, Ithaca, N. Y.

NIAGARA FALLS, N. Y.—"Zoning Problem of the City of Niagara Falls" is the title of a pamphlet issued by the Niagara Falls Chamber of Commerce, and contains "An Outline of Regulations by John Nolen, Town Planner."

OTTUMWA, IOWA.—"The Ottumwa Way: A Successful City-County Plan" is the title of a folder issued by the Ottumwa Commercial Club.

PAINESVILLE, OHIO.—"Facts About the Lake County Chamber of Commerce" is the title of a pamphlet telling a few of the accomplishments of that organization during the last year.

PROVIDENCE, R. I.—The year book of the Providence Chamber of Commerce for 1918-1919 has been issued.



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Costly
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A Labor Saving Method for Cleaning Sewer Basi

Clean your catch basins in the best and most economical manner by using the Otterson Auto-Eductor. All debris deposited directly into the body of the machine doing away with the filthy conditions depicted above.

If CLEANLINESS and ECONOMY are the aims of your city, you can secure facts and figures from us showing the savings made possible by the Otterson Auto-Eductor in other cities as well as the improved sanitary conditions resulting from its use.

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THE OTTERSON AUTO-EDUCTOR COMPANY

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THE NEW WAY

THE OTTERSON EDUCTOR—CONSERVES TIME, LABOR, HEALTH & MON

Changes Among The Secretaries

A list of the recent changes and new appointments occurring among the secretaries of commercial and civic organizations thruout the United States.

Readers are asked to notify the Editors of such changes as soon as they occur, in order that the list may be made as complete as possible each month.

George M. Adams has been elected secretary of the Board of Commerce at Ford, Mich.

George H. Anderson has resigned as secretary of the Elgin, Ill., Commercial Club, to accept the position of Assistant State Fire Marshal.

Fred C. Beebe is the new secretary of the Chamber of Commerce at Tucumcari, N. Mex.

H. R. Branche has resigned as secretary of the Norwich, Conn., Chamber of Commerce, to become field assistant to the Director of the Department of Americanization, Connecticut State Council of Defense, with headquarters at Hartford, Conn. He is succeeded at Norwich by L. M. Crandall.

J. E. Breaux, Jr., has been elected secretary of the Biloxi, Miss., Commercial Club, succeeding V. J. A. Tucei.

Major John R. Brennan has been elected secretary of the Rapid City, S. Dak., Commercial Club.

George W. Briggs has resigned as secretary of the Lubbock, Tex., Chamber of Commerce, to become field manager of the West Texas Chamber of Commerce. F. D. Brown has been elected acting secretary of the Lubbock organization.

A. Morgan Chase has been elected secretary of the newly organized Chamber of Commerce at Sarnia, Ont.

William F. Chase has been selected as the secretary of the Millbury, Mass., Board of Trade.

D. P. Chindblom has tendered his resignation as traffic manager of the Rochester, N. Y., Chamber of Commerce and director of the Industrial Management Council, to become associated with the American Association of the Baking Industry.

Earl P. Doyle has resigned the secretaryship of the Santa Fe, N. Mex., Chamber of Commerce.

John S. Doyle has been elected secretary of the Bellefontaine, O., Chamber of Commerce, succeeding Merlyn R. Whitney.

J. W. Dunn is the new secretary of the Brownwood, Tex., Chamber of Commerce, succeeding Porter Whaley. Mr. Dunn was formerly secretary of the Chamber of Commerce at Electra, Tex.

Roy L. Emry has been elected secretary of the Creston, Ia., Commercial Club, succeeding J. F. Bryan. Mr. Emry was formerly secretary of the Jefferson County Community Club, and is succeeded in that position by D. B. Cassat.

Max Goodsill is the new secretary of the Helena, Mont., Commercial Club, succeeding Dr. L. M. Rheem.

D. C. Greenman has resigned as secretary of the Enid, Okla., Chamber of Commerce.

Myron Hawkins is the new secretary of the Community Association, Charlotte, Mich.

E. B. Jorgenson has been elected secretary of the Milford, Utah, Commercial Club.

L. B. Judson is the new secretary of the Gary, Ind., Commercial Club. Mr. Judson was formerly Membership Secretary of the Chicago Association of Commerce.

G. E. Kelly is the new secretary of the Terrell, Tex., Chamber of Commerce.

L. W. Krake has been elected secretary of the Commercial Club at Coloma, Mich.

F. Van Z. Lane has tendered his resignation as manager of the Jersey City, N. J., Chamber of Commerce, to accept the position of Chief Transportation Engineer of the Packard Motor Car Company of Detroit.

Richard H. Lewis has been elected secretary of the Chester, S. C., Chamber of Commerce.

Irving B. Lincoln has been elected secretary of the Hamilton, Ohio, Chamber of Commerce. Mr. Lincoln was formerly connected with the East St. Louis office of the Community Organization Branch of the Ordnance Department.

J. P. Mack has been elected secretary of the reorganized Chamber of Commerce at Cleburne, Tex.

S. E. Miller has resigned the secretaryship of the Mineral Wells, Tex., Chamber of Commerce, to accept the position of field manager of the West Texas Chamber of Commerce. He is succeeded by P. E. Bock.

Irving C. Norwood has resigned the secretaryship of the Bethlehem, Pa., Chamber of Commerce.

C. W. Otto has been elected secretary of the Pontiac, Mich., Board of Commerce.

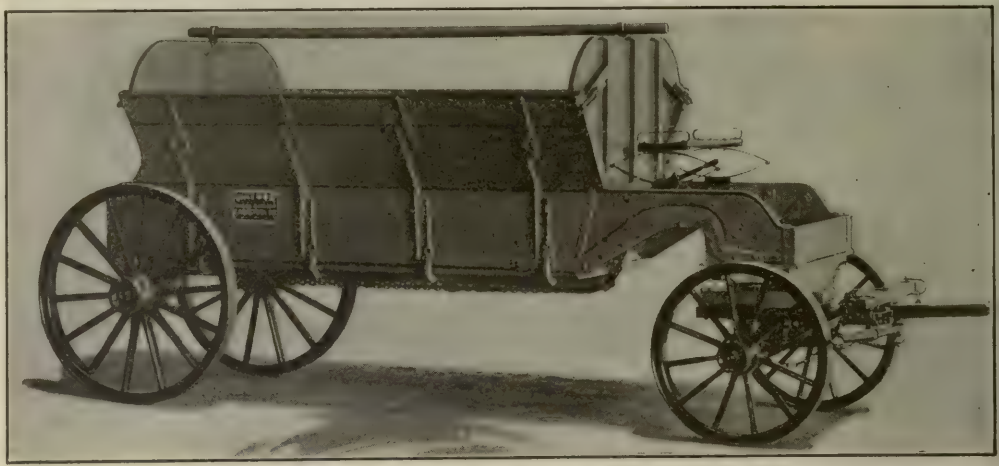
Henry J. Perkins has tendered his resignation as industrial commissioner of the Kansas City, Mo., Chamber of Commerce, to accept a similar position with the Armour-Swift-Burlington interests.

Edward H. Puhr has been elected secretary of the Commercial Club at Highmore, S. Dak.

J. F. Redfield is the new secretary of the Community Club at Shenandoah, Iowa, succeeding G. W. Brown.

Karl M. Roberts has been elected secretary of the El Paso, Tex., Chamber of Commerce.

William Flewellyn Saunders, formerly secretary of the Missouri Council of Na-



TYPE OF WATSON ASH WAGON USED BY NEWARK, N. J.

For Hauling Ashes and Road Building Materials Watson Dump Wagons

are giving splendid service to many municipalities and counties. Watson Dump Wagons are the favorites with many of the best known city and county engineers, contractors and others having to do with grading and road building work in all parts of the United States.

The non-sagging bottoms are an important feature. The bottoms overlap and stay tight.

Notwithstanding the fact that Watson Wagons are lighter than equal capacity wagons of other makes, they stand the wear and tear of rough hard service or the terrific pounding of a steam shovel if necessary.

What is the reason for this superior service? It is the result of Watson design, Watson construction, Watson workmanship, and Watson materials, all the best of their kind.

In addition to Watson Dump Wagons we also make a full line of trailers, semi trailers and tractors. No matter what your hauling problem is, you will be interested in our illustrated catalogs which will be sent free of charge on receipt of your address.

Watson Wagon Company

30 Center Street **Canastota, New York**



tional Defense, has been selected by the American Chamber of Commerce of Mexico as its representative in America, to obtain the coöperation of American firms interested in the future of Mexico. Mr. Saunders has opened up offices in the Commercial Building at St. Louis, Mo.

Stephen F. Sart has been elected secretary and general manager of the Fifth Avenue Association of New York City.

Mandel Sener has been elected secretary of the Ashland, Ky., Chamber of Commerce. Mr. Sener was formerly secretary of the New Bern, N. C., Chamber of Commerce.

S. T. Sheard has been elected secretary of the Humboldt, Tenn., Business Men's Club, succeeding A. B. Foust, who has resigned to enter the real estate business.

Charles W. Shive has resigned the secretaryship of the Chamber of Commerce of Quakertown, Pa. He is succeeded by Richard Hillegass.

Albert Smith has resigned the secretaryship of the Greenville, Mich., Chamber of Commerce, to become associated with the Anti-Saloon League. He is succeeded by Joseph H. Webster.

Erby E. Swift has tendered his resignation as special agent of the U. S. Department of Justice at Beaumont, Tex., to become secretary of the American Chamber of Commerce at Tampico, Mexico.

Lucian Thomason has been elected secretary of the newly organized Eastern Arkansas County Commercial Club, with headquarters at St. Charles, Ark.

Carl W. Ullman has resigned the secretaryship of the Richmond, Ind., Commercial Club, to become associate trust officer of the Dollar Savings and Trust Company and the First National Bank at Youngstown, O.

Major Henry G. Updike has been elected managing director of the Broadway Association of New York City, succeeding E. W. Estes.

Merlyn R. Whitney has resigned the secretaryship of the Bellefontaine, O., Chamber of Commerce, to accept a position as assistant secretary of the Chamber of Commerce at Newark, O.

Roscoe D. Wyatt has resigned as manager of the Hoboken, N. J., Chamber of Commerce. He is succeeded by Richard F. Malia.

CHANGES AMONG STATE LEAGUES OF MUNICIPALITIES

Prof. Homer Talbot has resigned as secretary of the Municipal Reference Bureau of the University of Kansas and as secretary-treasurer of the Kansas League of Municipalities at Lawrence, Kans., to accept the position of executive secretary of the New Jersey State League of Municipalities at Princeton, N. J.

Albert A. Long has resigned as secretary of the Bureau of Municipal Research and Reference of the University of Texas and as secretary-treasurer of the League of Texas Municipalities at Austin, to accept the vacancy at Lawrence, Kans., caused by Professor Talbot's resignation.

Captain Frank M. Stewart, instructor in the School of Government of the University of Texas, has been selected as secretary of the Bureau of Municipal Research and Reference of the University of Texas, and as secretary-treasurer of the League of Texas Municipalities, to succeed Mr. Long.

Individual Liability for Preventable Fire

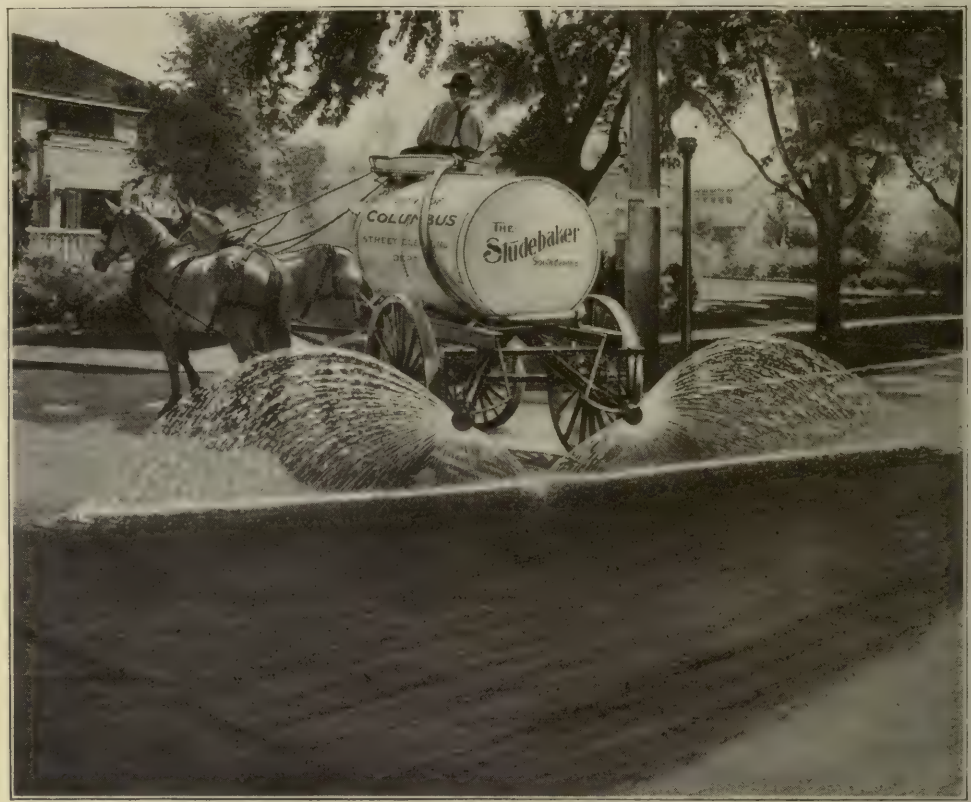
By W. T. Colyer

Secretary, N. F. P. A. Committee on Public Information

THE world shortage of food and other essentials of life has undoubtedly awakened many slumbering consciences to a realization of the obligation resting upon every individual to do his or her part in preventing waste of natural and created resources of every kind. One of the signs of this awakening is to be found in the increasing disposition of city authorities to compel the citizen who has a fire caused by the neglect or violation of a city ordinance or of an order of the fire marshal or fire chief, to repay to the city the cost of extinguishing that fire.

New York City has for a number of years set an example in this respect, deriving its powers in the matter from a clause in the city charter. On May 6, 1915, Governor Brumbaugh signed a law placing upon the inhabitants of cities of the second class in the state of Pennsylvania a responsibility similar to that recognized in New York. On July 12, 1915, an ordinance became effective in Cleveland, Ohio, under which the principle of "individual liability" was extended to that city.

For a considerable period no further advance was made, but now for nearly two years the National Fire Protection Association's Committee on Public Information



THE HEALTHY CITY IS THE CLEAN ONE—*Ask Your Doctor!*

The preservation of Public Health demands not only clean streets, but cleaner street cleaning methods.

Hundreds of towns and cities throughout America are using Studebaker Flushers; while the number of communities in which Studebaker municipal equipment of various kinds is used exclusively or in part totals over three thousand.

Booklet describing complete line of Studebaker Municipal Equipment will be mailed upon request.

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South Bend, Indiana

Largest Manufacturers of Vehicles in the World—Established 1852

has been working hard at the problem of securing more municipal ordinances on the Cleveland model. The members of the Association in the various cities have responded well to the Committee's appeal, and during the last twelve months four cities have enacted individual liability ordinances. These cities are Cincinnati, Portland, Ore., Austin, Tex., and Newark, N. J. At the present moment efforts are being made to bring many other cities into line, and it is safe to say that in some of these places the efforts will soon be successful.

As might be expected, the propaganda of individual liability finds most favor in those cities which are most active in reducing their fire waste by other means. The ordinances already enacted might almost be regarded as by-products of larger movements. In Cleveland the Chamber of Commerce and the Association of Credit Men have for years undertaken systematic educational work in connection with the observance of October 9 as Fire and Accident Prevention Day, while the "best building" competitions instituted by the City Plan Committee in coöperation with other organizations provide a constant stimulus to good construction and civic patriotism. The Cincinnati Fire Department was one of the first in the country to organize fire prevention inspection on a large scale, and the press of the city treats fire prevention topics as items having a news value. The whirlwind fire prevention campaigns that have from time to time been organized in Portland, Ore., are matter of common knowledge all along the Pacific Coast. Nor was the ordinance lately passed in the capital city of Texas a lone manifestation of awakened interest in fire prevention. Not very long prior to the passage of the ordinance a decision had been reached to make the teaching of fire prevention a part of the curriculum in the public schools thruout the state. So far as Newark is concerned, the annual educational exhibitions organized by Captain C. Albert Gasser in the City Hall and visited by thousands of school children as well as adults have attracted widespread attention among fire preventionists and have led to similar displays in other places.

There is plenty of evidence to show that fires can be prevented when people have what they consider an adequate motive for keeping the number of fires at a minimum. When in 1913 the city of Indianapolis was for four days without fire protection, the Fire Chief issued a statement that any fire occurring during that period would endanger the whole city. Not a single fire occurred until protection was restored, but immediately afterward fires came along in sufficient number to make up the average for the city. Winnipeg had a very similar experience during a recent strike of the fire department. The following extract from a resolution drafted by a Citizens' Committee of 100 organized during the strike to assist in carrying on the public utilities speaks for itself:

". . . . *And whereas* the city of Winnipeg has been singularly immune from fire during the strike of the firemen and such immunity in the opinion of this committee is largely due to common precautions against fire taken by property owners, merchants and householders during the period of disorganization of the fire brigade:

Be it resolved that in the opinion of this committee adequate measures should be taken by the municipal or provincial authorities for the adoption and enforcement of legislation and regulation for the prevention of fires."

In other words, when conditions are most favorable to a conflagration, conflagrations don't occur. It is the same story with the specially hazardous processes in factories. Intelligence and energy being devoted to safeguarding such processes, a comparatively small proportion of serious fires are attributable to them. The great disasters which render thousands workless or homeless, or both, are usually the result of somebody's willingness to take a chance with the lives and property of his fellow men, as well as his own, because the chance seems a small one. Unpleasant consequences of a thought-provoking character need to be inflicted upon such individuals whenever opportunity presents itself; and no better method has yet been devised than that of making the guilty person pay the cost of extinguishing any fire, small or great, which may result from his carelessness or lawlessness.

Another FEDERAL



Federals Save The Public Funds

Whatever else a community may neglect, it seldom forgets its fire department now-a-days. A majority of even the smaller cities all over the country are provided with the only safe and sure protection—motor fire trucks.

Midnight fires, fanned to raging flames by a gale, have driven home to many a town the decided wisdom of motor apparatus, and in a surprising number of cases their choice has been the Federal.

In a less spectacular way, the Federal truck is steadily winning recognition in other departments of municipal work—where its saving in time and public expenses are resulting in its constantly increasing use.

"Traffic News," a magazine of haulage facts, will be sent to any municipal officials or interested citizens upon request.

FEDERAL MOTOR TRUCK CO.
34 FEDERAL STREET DETROIT, MICH.

FEDERAL

One to Five Ton Capacities

"Return loads will cut your haulage costs."

A New Leader for the National Safety Council

THE National Safety Council announces thru its Executive Committee the resignation of General Manager W. H. Cameron, who leaves the Council to become Manager of Industrial Relations for the Eastman Kodak Co.

At a meeting held on February 24, the Executive Committee unanimously elected as General Manager C. W. Price, who has been the Council's Field Secretary for some time, and who for the past fifteen years has been known to all its members, and to the country generally, as a pioneer and leader in safety. Mr. Price spent twelve years with the International Harvester Company, the last four years of which he was in charge of the safety work for all the plants. For five years he was assistant to the Wisconsin Industrial Commission, during which time he worked out the standards on safety and sanitation, conducted educational safety campaigns in the large industrial centers and organized safety in the larger plants. During the summer of 1917 he acted as Director of the Safety Survey made by the United States Employment Compensation Commission of all arsenals and navy yards. He has been Field Secretary of the National Safety Council for the past two and a half years, during which time he has visited practically all of the large industrial centers.

At the same meeting of this committee, Sidney J. Williams, formerly manager of the Accident Prevention Division, was elected secretary, and F. W. Pardee, formerly business manager, was elected treasurer.

On the Calendar of Conventions

APRIL 23-25.—CHICAGO, ILL.
A national convention of engineers representing every branch of the profession called by the *Engineering Council* to discuss the proposed Federal Department of Public Works. Secretary of the Engineering Council, Alfred D. Flinn, 29 West Thirty-ninth Street, New York City.

APRIL 25-26.—PHILADELPHIA, PA.
American Academy of Political and Social Science. Annual meeting. Secretary, J. P. Lichtenberger, Logan Hall, West Philadelphia, Pa.

APRIL 29-MAY 1.—ST. LOUIS, MO.
Chamber of Commerce of the United States of America. Annual meeting. General Secretary, Elliot H. Goodwin, Riggs Building, Washington, D. C.

APRIL 30-MAY 2.—NASHVILLE, TENN.
American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

MAY 1.—ST. LOUIS, MO.
National Association of Commercial Organization Secretaries. Readjustment Conference. Secretary, J. P. Hardy, Commercial Club, Fargo N. Dak.

MAY 6-8.—OTTAWA, ONT.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 87 Milk Street, Boston, Mass.

MAY 13-14.—CHICAGO, ILL.
American Association of Engineers. Annual convention. Secretary, C. E. Drayer, 29 South LaSalle Street, Chicago, Ill.

MAY 16.—NEW YORK CITY.
American Institute of Electrical Engineers. Annual business meeting. Secretary, F. L. Hutchison, 33 West Thirty-ninth Street, New York City.

MAY 16-17.—AKRON, OHIO.
Ohio Commercial Secretaries' Association. Annual convention. Secretary, Vincent S. Stevens, Chamber of Commerce, Akron, Ohio.

MAY 20-22.—QUEBEC, QUE.
Canadian Good Roads Association. Annual convention. Secretary, George A. McNamee, New Birks Building, Montreal, Que.

MAY 26-28.—ATLANTA, GA.
Southern Commercial Secretaries' Association. Annual convention. Secretary, C. W. Roberts, Henderson, N. C.

MAY 27-28.—NIAGARA FALLS, N. Y.

MAY 29.—BUFFALO, N. Y.
American City Planning Institute. National Conference on City Planning. Secretary, Flavel Shurtleff, 19 Congress Street, Boston, Mass.

JUNE.—FIRST WEEK.—SCHENECTADY, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual conference. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JUNE 1-8.—ATLANTIC CITY, N. J.
National Conference of Social Work. Annual conference. General Secretary, William T. Cross, 315 Plymouth Court, Chicago, Ill.

JUNE 9-13.—BUFFALO, N. Y.
American Water Works Association. Annual convention. Secretary, J. M. Diven, 47 State Street, Troy, N. Y.

JUNE 14-17.—ATLANTIC CITY, N. J.
National Tuberculosis Association. Annual meeting. Assistant Secretary, Philip P. Jacobs, 381 Fourth Avenue, New York City.

JUNE 16-20.—SALT LAKE CITY, UTAH.
International Association of Rotary Clubs. Annaul convention. Secretary Chesley R. Perry, 910 South Michigan Avenue, Chicago, Ill.

JUNE 17-20.—ST. PAUL AND MINNEAPOLIS, MINN.
American Society of Civil Engineers. Annual convention. Secretary, Charles Warren Hunt, 33 West Thirty-ninth Street, New York City.

JUNE 18-20.—LANSING, MICH.
League of Michigan Municipalities. Annual convention. Secretary, Robert T. Crane, University of Michigan, Ann Arbor, Mich.

JUNE 23-26.—KANSAS CITY, MO.
Southwestern Water Works Association. Annual meeting.. Secretary, E. L. Fulkerson, 617 Washington Street, Waco, Tex.

JUNE 24-27.—KANSAS CITY, MO.
International Association of Fire Engineers. Annual convention. Secretary, Chief James McFall, P. O. Box 611, Philadelphia, Pa.

JUNE 29-JULY 5.—MILWAUKEE, WIS.
National Education Association of the United States. Annual meeting. Secretary, J. W. Crabtree, 1400 Washington Avenue, N. W., Washington, D. C.

NOVEMBER 12-14.—NEW ORLEANS, LA.
American Society of Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, 304 East Walnut Street, Bloomington, Ill.





Built to Do A Particular Job

The GMC truck shown above is one of six similar trucks operated by the Garbage Collection Company which gathers the refuse of the city of Wilmington, Del.

It is typical of the way in which GMC trucks are being used by public service corporations, municipal governments and private enterprises all over the country.

Not only was this particular sized GMC selected to fit exactly the work to be done but the body equipment was built especially for the work. And this is the way with every GMC.

From among the six standard sizes of GMC trucks—three-quarter ton to five ton capacity—it is always possible to select the proper chassis—the one whose capacity and size will handle the job most efficiently. Then body equipment can be had to fit the particular needs of the work.

GMC trucks are built from the finest materials. They are built to do hard work day after day without faltering and at a low cost for operation and maintenance.

Let Your Next Truck be a GMC.

GENERAL MOTORS TRUCK CO.

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Branches and Distributors in Principal Cities. (468)

The City's Legal Responsibilities and Powers

A Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

For special assistance in ascertaining the law, statutory or judicial, on any legal question lating to municipalities, address Legal Department, THE AMERICAN CITY, *Tribune Building, ew York City.*

ducing Interest and Penalties

A city council has no power to direct the clerk to collect interest at a less rate n that prescribed by statute upon instal- nts of special assessments made against itting property to pay for street im- vements, nor to remit penalties accrued delinquent instalments. Where a city contracted for such an improvement to paid for by bonds payable solely from essments levied on benefited land and stituting no liability against the city, the nicipality is not liable to a holder of the ds for unauthorized reduction by resolu- n of the city council in the rate of in- st prescribed by law to be paid upon de- red instalments of such assessments, or uthorized rebates of penalties accrued delinquent instalments. (Oklahoma preme Court, Mackenzie vs. City of Ana- ko, 176 Pacific Reporter, 951.)

✣ ✣

anging Street Grades

n the absence of statutory or constitu- nal provisions, change in grade of high- y made by municipal authority does not itle an owner of abutting property to re- er damages on account of consequential ury to his property. Under a statute giv- a right to damages where a street grade raised more than three feet, the making repairs on a street from time to time in h way that the grade is ultimately raised re than three feet gives no cause of ac- n where it appears that there was not a se of more than three feet at any one e, and it is not shown that the work e at the several times was pursuant to definite plan to increase the grade ve the statutory limit. (Vermont Su- me Court, Hoyt vs. Village of North y, 105 Atlantic Reporter, 33.)

Invalid Municipal Contracts

A contract for an addition to a municipal water-works system was not binding upon the city if it was awarded in violation of a statute requiring an advertisement for proposals for the work. It is incumbent upon persons dealing with public officers to ascertain whether proposed action by the latter falls within the scope of their authority, and whether the requirements of law affecting a contract proposed to be entered into have been observed. (Ohio Supreme Court, Frisbie Co. vs. City of East Cleveland, 120 Northeastern Reporter, 309.)

✣ ✣

Defective Sidewalks

A municipality having assumed control over shade trees growing within the sidewalk limits of a street or highway, an abutting owner is not liable to a pedestrian for injury sustained by the latter thru falling at a defective point in the sidewalk, caused by roots of the tree raising a section of the walk. (New Jersey Court of Errors and Appeals, Rose vs. Slough, 104 Atlantic Reporter, 194.)

✣ ✣

New York Public Service Commission

The New York Legislature having fixed $1 per 1,000 cubic feet as the maximum charge collectible by the Municipal Gas Company for service in Albany, the Public Service Commission is without power to authorize an increase in the rate even if it might appear that the rate is grossly inadequate and has become so burdensome to the company as to be confiscatory of the company's property. (New York Court of Appeals, People on relation of Municipal Gas Company vs. Public Service Commission, Second District, 120 Northeastern Reporter, 132.)



HOW are you cleaning your catch basins and sewers? In the old slow, expensive and disease-breeding way, with piles of filth on your streets? Or the "SECO" way?

The "SECO" Portable Pumping Apparatus cleans sewers and catch basins at a saving of 50 to 90% over the old way.

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nvalid Laundry Inspection Ordinance

An ordinance of the city of Palo Alto, al., purported to impose a fee of $3 cover- ig the inspection of laundries serving resi- ents of the city. It also provided for a ileage fee of 30 cents for each mile raveled by the inspectors going to and rom the laundry. At least one monthly in- pection was required, and more might be ade. Plaintiff conducts a laundry in the ity of San José, twenty miles away, and, eeking to do business in Palo Alto, attacked he validity of the ordinance on the ground hat it operated unreasonably and with dis- rimination against him and other laundry wners whose plants were at some distance rom Palo Alto. The inspectors had sev- ral means of going to and from between he two cities at a transportation charge not xceeding three cents per mile. Under these ircumstances it is held by the California upreme Court that the ordinance is void or unreasonableness in fixing an excessive ileage fee, as contended by plaintiff. (Ex arte Blois, 176 Pacific Reporter, 449.)

✣ ✣

xempting Lots from Assessment

The provision of the Greater New York harter for exemption of a lot from assess- ent for street opening purposes where the wner deeds land within the proposed street mits to the city applies only when the eed is given before the appointment of ommissioners of estimate and assessment. New York Supreme Court, Appellate Di- ision; In re Boulevard in Queens Boro; 73 New York Supplement, 28.)

✣ ✣

ublic Improvement Contracts

Where a public improvement contract akes a city engineer or architect the judge s to quantities, qualities, values, etc., of aterials and work furnished under the greement, his determination is conclusive, xcepting as it may be shown to have been fluenced by fraud or bad faith. But the ty may waive a clause in such a contract, equiring production of an engineer's cer- ficate before the contractor shall be en- tled to pay for extra work. Such a ause may be found to have been waived hen it is shown to have been repeatedly nored by the parties. (Maryland Court f Appeals, Mayor and City Council of altimore vs. Poe, 104 Atlantic Reporter, 50.)

Exceeding Municipal Debt Limits

Where an ordinance adopted by the city of Cambridge, Mass., establishing a mini- mum daily wage for laborers employed by the municipality had the effect of creating a deficit in the current appropriation for the street department it was invalid as vio- lating a statute forbidding expenditures in excess of available appropriations. (Massa- chusetts Supreme Judicial Court, Shannon vs. Rockwood, 121 Northeastern Reporter, 31.)

✣ ✣

Controversies Under Construction Contracts

Provision in a contract for construction of a municipal sewer, that the chief engi- neer of the city's sewerage commission should have power to determine all contro- versies arising between the parties under the contract, applied to a dispute as to the city's liability for interfering with the con- tractor's blasting operations in the perform- ance of the work. (Maryland Court of Ap- peals, Mayor and Council of Baltimore vs. M. A. Talbott Co., 105 Atlantic Reporter, 149.)

✣ ✣

Rights Under Garbage Removal Contract

Provision in a garbage removal contract with a city that the contractor should per- form the work to the satisfaction of the municipal hospital and health board did not warrant the city in refusing to pay for un- satisfactory services, altho the provision might have sustained a termination of the contract. The contractor is entitled to re- cover compensation on showing substantial compliance with the terms of his agree- ment. (Kansas City Court of Appeals, Boyer vs. Kansas City, 205 Southwestern Reporter, 873.)

✣ ✣

Kansas Ouster Law

A chief of police who was ousted from office under the statutes of Kansas for will- ful misconduct, consisting in attempting to obstruct a constable in serving a lawful warrant, was disqualified against holding office during any part of the unexpired portion of the term for which he had been chosen, but was not disqualified for re- appointment on expiration of that term. (Kansas Supreme Court, State vs. Hen- schel, 175 Pacific Reporter, 393.)

ROADS



MUNICIPAL ROAD WORK, patching, surfacing and road-build can be handled more efficiently and more economically wit F-W-D Truck. It will go through any kind of going, loade capacity, and when necessary with a 5-ton trailer behind.

F-W-D Trucks cost less to operate, less to keep up and further on one set of tires. The F-W-D Truck is so pov that it can be used as a tractor to haul drag, grader or sc —or may be used for sprinkler or flusher.

F-W-D Trucks turn in a small circle—they handled in crowded quarters and narrow alleys wi fect ease. Four-wheel-drive traction as applied F-W-D gives tremendous power, no skidding pavement and provides a service brake on all four w

Write for the F-W-D Truck catalo records of performance—*today*.

The F-W-D Auto Comp

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Canadian Branch, Kitchener, Ontari

F W D TRUCKS

The boys from the Front will tell

Demoting Employes at "Pleasure"

A statute empowering a police commissioner to demote "at pleasure" sergeants appointed from the positions of patrolmen does not mean that demotion may be made upon the mere caprice or whim of the commissioner, but confers power in the exercise of a wise discretion, with an eye to the good of the service. (New York Supreme Court, Appellate Division; People on the relation of Curtis vs. Hogeboom et al., Civil Service Commissioners of Mt. Vernon; 173 New York Supplement, 417.)

✣ ✣

Louisiana Fire Escape Law

The law enacted by the Louisiana Legislature in 1914, making owners of certain buildings liable for personal injuries or death resulting from violation of the requirements of the law for installation of fire escapes, is constitutional. (Louisiana Supreme Court, Dotson vs. Louisiana Central Lumber Co., 80 Southern Reporter, 705.)

✣ ✣

Liability for Police Officers' Acts

As police officers of a municipality exercise governmental functions, the city is not liable in damages for their wrongful acts, as where a police raid is wrongfully conducted. (Louisiana Supreme Court, Joliff vs. City of Shreveport, 80 Southern Reporter, 200.)

✣ ✣

Appeals in Paving Proceedings

A charter provision fixing ten days as the limit within which a property owner protesting against street paving proceedings may appeal from an order of the municipal authorities overruling his protest is not unconstitutional as involving a deprivation of property rights without due process of law. (Texas Court of Civil Appeals, City of Fort Worth vs. Capps Land Co., 205 Southwestern Reporter, 491.)

✣ ✣

Right to Enjoin Municipal Expenditure

Suit lies at the instance of municipal taxpayers to enjoin city authorities from purchasing a water-works system at a grossly excessive price, or from making any other extravagant expenditure amounting to waste of the city's funds. (New Jersey Court of Chancery, Watters vs. Bayonne, 104 Atlantic Reporter, 770.)

Increasing Sewerage Rates

A franchise for the construction of a sewer system by a sewerage company, fixing maximum rates to be charged by the company, did not preclude the Public Utility Commission of New Jersey from subsequently increasing the rates on application of the company, the municipality being merely an agency of the state. (New Jersey Court of Errors and Appeals, Collingswood Sewerage Co. vs. Boro of Collingswood, 105 Atlantic Reporter, 208.)

✣ ✣

Accidents in Municipal Hospitals

As the maintenance of a city hospital is purely a governmental function, accidental injuries to patients, altho caused by negligence of the city's nurses, fall within the general rule that a municipality is not liable for injuries resulting from negligence of its officers and employes while engaged in the performance of governmental functions. (Kentucky Court of Appeals, Browder vs. City of Henderson, 207 Southwestern Reporter, 479.)

✣ ✣

Pest-House as Nuisance

A pest-house, altho dignified by designation as a detention hospital for the treatment of infectious diseases, constitutes such a nuisance, when located in a thickly settled residential district, that a court will enjoin health authorities from maintaining it there at the instance of aggrieved property owners. (Michigan Supreme Court, Birchard vs. Board of Health of City of Lansing, 169 Northwestern Reporter, 901.)

✣ ✣

Paying for Street Improvements

In the absence of statutory prohibition, a city may generally contract for a street improvement at municipal expense where there is no authority for making the costs a charge against abutting property. A municipality authorized to contract for a street improvement, and not forbidden to pay for it, is liable to the contractor, notwithstanding presence of a provision in the contract for payment from local assessments, if, being authorized to levy assessments, the city authorities nevertheless fail to do so. (Kentucky Court of Appeals, Cohen vs. City of Henderson, 207 Southwestern Reporter, 4.)



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THE unusually high percentage of power actually delivered at the rear wheels under even the most unfavorable conditions makes the Denby best for road building, paving and similar branches of municipal work.

Perfect enclosure of all working parts, and the high quality of the materials used in their construction enable them to withstand this hard service.

Capacities from 1 to 6 tons.

DENBY MOTOR TRUCK COMPANY, DETROIT

The City Manager Movement

Edited by Harrison G. Otis
Secretary of the City Managers' Association

Three More Cities for Manager Plan

MUSKEGON, MICH.—On March 5, Muskegon endorsed the commission-manager plan by a vote of four to one. This is the first time that the women of Michigan have been permitted to cast their ballots on such a question, and the papers give them very large credit for the results of the election. The charter commission will draft a manager charter to be voted upon soon.

HAYS, KANS.—The vote on the adoption of the commission-manager plan, March 7, gave the new charter a majority of two to one. Hays has a population approximating 3,300, and the city manager to be chosen is expected to manage the municipal water and power plants and supervise construction of sewers, sidewalks and paving as part of his duties.

MCCRACKEN, KANS.—This small city, with its population of 1,000, acquired a commission-manager charter March 13. There were but four negative votes out of a total of ninety-one ballots cast at the election, making a ratio of twenty-two to one in favor of the new plan. So far as known, this established a record in charter elections.

✣ ✣

Waite Contrasts German and American Plans

Colonel Henry M. Waite, who has recently returned from Europe, draws some sharp and significant contrasts between the autocratic bürgermeister system as he found it in Germany and the democratic commission-manager plan as he knows it in America. It will be recalled that Colonel Waite resigned as city manager of Dayton, Ohio, last year to enter the Army. As a pioneer in the new profession of city manager, it seems quite appropriate that he should have been assigned to deal with the German municipal authorities.

While stationed at Coblenz with the American Army of Occupation, Colonel Waite, in writing of his experiences with the bürgermeisters, commends their executive efficiency and adds:

"But the Germans don't have the city manager plan. The resemblance is utterly superficial. The whole democratic spirit of our manager cities is missing. I talked with labor radicals, and apparently they had not even thought of the idea of electing friendly councilmen under the new democratic régime and thereby keeping the magistrate under continuous and flexible control. A government that should obey the rank and file of the people was a curious idea to them."

Before leaving Germany, Colonel Waite indicated his eagerness to return home and his willingness to become once more an American city manager.

✣ ✣

Oklahoma Schools Debate Manager Plan

Thruout the state of Oklahoma the public schools are using as a subject for interscholastic debate: *"Resolved,* that the city manager plan of municipal government should be adopted by all cities in the United States with over 5,000 inhabitants."

In this connection it is interesting to note that more than one dozen cities and towns in Oklahoma are seriously considering the adoption of commission-manager government, and in some, charter campaigns are already under way. The University of Oklahoma Extension Department has published a debate bulletin on the manager plan.

✣ ✣

City Managers Being Promoted

Altho the profession of city manager is in its infancy, there have already been twenty instances of the promotion of a manager from the administration of one city to that of a larger.

A complete tabulation of city manager municipalities, giving the population, date when the new plan became effective, method by which the position of manager was created, and the name, date of appointment and salary of the city manager is now being prepared for the research department of THE AMERICAN CITY.



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Waterworks Men!

Look to your costs in these days of high prices and wages. The P & H Excavator purchased by the Erie, Pa., Water Dept. (by whom the record shown here was made) returned half its cost on four miles of mains.

P & H Equipment covers every phase of the job from the opening of the trench to getting the backfill back quickly and compactly. Send for general catalog.

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MILWAUKEE, WISCONSIN

660 Ft. In 3 Hou

During 1915, considered ordinary year, the city laid 25,(ft. of 6- and 12-in. mains in ha excavated trenches at a labor c for digging, laying and back-fill of 28.8c. a foot for the smaller s 36.08c. a foot for the larger si Much more pipe was laid in 1(and this year because of the ra growth of the city. While co plete unit costs for the last yea work have not yet been compil it is known that rising wa caused considerable increase o those of 1915. Records for 10,(ft. of 6-in. main laid at one ti last year show a total labor cos 37.1c. per foot, of which digg alone represented 19c. with co mon labor 27½c. an hour. T trench was in clay, with shale the bottom. As compared w this, the first performance with trenching machine, excavating 1620 ft. of line, was accomplish at a fuel and labor cost of $132. or 8.2c. per foot for actual diggi This was in gravel which requi sheeting, the cost of which is cluded in the above figure. another occasion, in digg through cut-over land, where ma large but partly rotted stumps w cut through, 682 ft. of trench v dug in four hours, at a cost $7.55 for three men and 15 gal. gasoline—only 1.1c. per foot. Oct. 5 the machine made its spe record of 660 ft. in three hours, $3.02 for gasoline and $1.88 the wages of the engineer a helper being charged to the ope tion. This was about ¾ of a c per foot. Both trenches were shale at the bottom.

P&H excavators, back-fillers, tampers.

Municipal and Civic Publications

NNICUTT, P.; WINSLOW, C., E. A.; and PRATT, R. WINTHROP.

Sewage Disposal. Second Edition, rewritten. xvii + 547 pp. 141 illustrations. John Wiley & Sons, Inc., Publishers, New York. 1919. **$4.00**

This standard treatise, first published in 1910, has been ught entirely up to date and now constitutes the latest horitative publication on this constantly advancing ence. The chapters on Screening, Sludge Disposal and emical Precipitation, in particular, have been revised, new chapters on the newer processes of two-story k treatment, activated sludge and acid treatment have n added. Two additional chapters on design and ration of sewage treatment plants and the disposal of retal wastes from houses and institutions have been in- porated.

CK, CHARLES LATHROP, President National War Garden Commission.

The War Garden Victorious: Its War Time Need and Its Economic Value in Peace. xiv + 179 pp. + appendix. Illustrated. Published 1919 by the National War Garden Commission.

A most interesting account of the inception and de- opment of the home and community garden movement der the National War Garden Commission is given in s book, which is copiously illustrated with color plates, otographs and cartoons. How the National War Gar- n Commission came into being; how "an army of five llion hoes" was mobilized; how this army helped win war; how "big business," the railroads, the house- ves, the school children and the press all coöperated to ke the movement a success; the part played by "day- ht saving"; and the future of war gardening—all these ases of the war-garden story are vividly pictured. An pendix contains in full two of the victory books issued s year by the Commission: "War Gardening" and lome Canning and Drying" (both "Victory Editions"). The Commission states that "this book is not for sale, ing issued for presentation to those who aided so ser- ceably in this economic work."

LAY, HENRY, M. A.

Economics: An Introduction for the General Reader. xviii + 456 pp. The Macmillan Company, 64 Fifth Ave., New York. **$2.00**

Most elementary textbooks on economics are designed r college or university students and seldom take into nsideration the need of the general reader who has not e guidance of a teacher or the leisure of the student, t, on the other hand, has some practical knowledge on e problems discussed. Professor Clay has written this ok with these needs particularly in mind. The Ameri- n edition, revised by Professor Agger of Columbia niversity, differs from the English version only in that merican illustrations have in some places been substi- ted for the English ones, where their inclusion would ake the discussion clearer to the American reader and here it could be done without sacrifice to the readable- ss of the book.

ERRY, ERVIN S., in collaboration with O. W. Silvey, G. W. Sherman, Jr., and D. C. Duncan.

A Handbook of Physics Measurements. Volume II. Vibratory Motion, Sound. Heat, Electricity and Magnetism. x + 233 pp. 128 figures. John Wiley & Sons, Inc., 432 Fourth Ave., New York. Cloth **$2.00 net.**

WILSON, LUCIUS E., Vice-President of the American City Bureau.

Community Leadership: The New Profession. viii + 137 pp. Published by The American City Bureau, New York. 1919. **$1.50**

"During the great conflict," states the foreword of this volume, "the American people were told that food would win the war; that ships would win the war; and that guns and coal and airplanes and other things would win the war. Now that the fighting is over it has become evident that, essential as were these material things, it was leadership and ideals and organization and morale that really won the war. * * * And, as in the case of the Nation, the real strength of each community is measured, not so much by the abundance of its natural resources, nor by its position on the map, as by its leadership and ideals and organization and morale. Of these four factors, the quality of the last three is determined in no small degree by the character of the first. To community leadership, therefore, must we look for much of the motive power which shall guide America and the world into a new era of peace and progress and human happiness."

This book is written for the double purpose of helping to increase the efficiency and vision of secretaries of chambers of commerce already existing in more than 3,000 towns and cities in America and of inspiring men of a high grade of ability to enlist for community leadership by entering this new profession.

TIPPER, HARRY, Ex-President of the Association of National Advertisers; HOLLINGWORTH, HARRY L., Associate Professor of Psychology at Barnard College; HOTCHKISS, GEO. B., Professor of Business English, Head of Advertising and Marketing Division, New York University; PARSONS, FRANK A., President of the New York School of Fine and Applied Arts, Lecturer in Advertising Display in New York University.

Advertising, Its Principles and Practice. Second Edition, xv + 562 pp. Illustrated. 1919. The Ronald Press Co., New York City. **$6.00**

A complete volume on the economic and psychological factors in advertising, the make-up of advertising copy and the elements of display, with a final section on planning advertising campaigns.

CLARKE, IDA CLYDE, author of "American Women and the World War," etc.

The Little Democracy: A Text on Community Organization. x + 253 pp. Published by D. Appleton, 35 West 32d St., New York. **$1.65**

"Every school district should be a little democracy, and the schoolhouse, the community capital." With this as a basis, Miss Clarke discusses the community center, its organization, a model constitution for such community center organizations, the community forum, the neighborhood club, the home and school league, the work of community buying and banking, the community garden, the community market and kitchen, method of organizing the rural community, the development of boys' and girls' clubs, mothers' and daughters' clubs, and community music and drama. As Miss Clarke states, she has not tried to present her personal views, but has gathered in orderly sequence the views of experts in various lines of community work for the benefit of other students of this important subject.

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Nothing more fittingly embodies the spirit of patriotism and expresses appreciation of service than a **Walworth Steel Flag Pole** set in an artistic concrete base with a memorial bronze tablet. We furnish free the architectural detail drawings for the base and make the tablet to special order.

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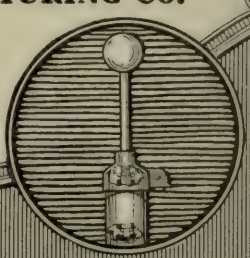
surmounted by a gilded copper ball, securely houses the sheave and insures against fouling of the halyard.

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ARNARD, J. LYNN, Ph.D., Philadelphia School of Pedagogy; and EVANS, JESSIE C., A. M., William Penn High School.

Citizenship in Philadelphia. 376 pp. Illustrated. John C. Winston Company, Philadelphia and Chicago.

The current text-book in civics usually gives a large ount of space to national and state government and atively scant attention to municipal government, with ich the citizens come more directly in contact. The thors of this book contend that every city needs a text-ok of its own, and they proceed to supply such a civic t-book for Philadelphia. Instead of dealing with the rmal structure of government, it deals with what is done d how, and the ways in which a citizen may help indi-dually and collectively to secure better government. It als briefly with the history of the city and then takes up ch questions as health, water-supply, street cleaning, e prevention, police, lighting, public schools, recreation, y planning, transportation, charity, courts, how the city ws are made, civil service, the division of parties and ection, and gives an interesting chapter on the business e of the city. The book is profusely illustrated with otographs and maps supplied by the various city de-rtments.

ARNER, AMOS G., Ph. D., late Professor of Economics and Social Science in Leland Stanford Junior University.

American Charities. Third Edition. Revised by Mary Roberts Coolidge, Ph.D., Professor of Sociology. Mills College, formerly Associate Professor of Sociology in Leland Stanford Junior Univerity.) xxii + 541 pp. Thomas Y. Crowell Company. 426 W. Broadway, New York. **$2.65**

This work, originally published in 1894 and revised in 908, has long been regarded as one of the standard orks in its field. Mrs. Coolidge, at Dr. Warner's re-uest, agreed to act as advisor in case a revision should necessary. She brought out the second edition seven ars after his death, and now brings the subject up to te by the addition of two chapters, the rearrangement of umerous tables and the addition of the facts necessary bring the observations in line with more recent develop-ents. The work still retains the original subdivisions: istorical and Theoretical, the Dependent Classes, Ad-inistration and Financiering, and the Supervision, Or-anization and Betterment of Charities.

WYFORD, H. B., author of "Purchasing: Its Economic Aspects and Proper Methods."

Storing: Its Economic Aspects and Proper Methods. xv + 200 pp. Illustrated. Published by D. Van Nostrand Co.. 25 Park Place, New York. **$3.50**

Irregularity in supply of material is not always the re-ult of actual shortage or surplus, but, as Mr. Twyford oints out, is due to the hesitancy of some and to a endency of others to store unwisely. When to store, hat to store and how to store it, the economic questions onnected with storing, the appliances to be used, the loca-ion and equipment of storerooms and warehouses, the anual and clerical operations and the practice of receiv-ng and delivering are all covered in this interesting nalysis of the problem, by the author of "Purchasing."

IDDINGS, FRANKLIN HENRY, LL. D., Professor of Sociology and the History of Civilization in Columbia University.

The Responsible State: A Reëxamination of Fundamental Political Doctrines in the Light of World War and the Menace of Anarchism. 108 pp. Houghton, Mifflin Co., Boston and New York. **$1.00**

UFFEY, EDWIN, Commissioner of Highways of State of New York.

Report of the State Commissioner of Highways: State of New York. 1917. 592 pp.

ASHBEE, C. R.

Where the Great City Stands: A Study in the New Civics. Quarto. xii + 166 pp. 120 illustrations. B. T. Batsford, Ltd., 94 High Holborn, London, W. C. **$6.25**

With the joy of creative work as a basis, the author of this volume has endeavored to examine and interpret the esthetic influences thru which we passed before the Great War, in order to evolve out of these a philosophy and a plan for a better and happier future in every city after the war. He makes a strong plea for nobility and foresight in city planning and for maintenance of the arts, for, "however much we may improve them, our cities are but empty shells unless they hold some live, creative enterprise, unless in every city there are men inventing, dreaming, finding the city its soul." The following is a partial list of chapter titles: The Object of the Book, an Appeal to the Practical Idealist; Axioms; How the Art Influences of Our Time Have Come to Us; The Idea Behind the Arts and Crafts Movement; The Housing and Town Planning Movement; The Garden City Idea; The City Center, Zones, Lungs and Open Spaces; Dirt, Noise and the Menace of Mechanism; Waste in Education; Waste in Industry; Coördination in the City as Against Competition; How the Arts Might Be Maintained; The Reaction of Town and Country; and Foresight and the Utopian Habit of Mind. The typography and arrangement of this book give it a most pleasing appearance, and the numerous drawings, photographs, diagrams and plans add both to the attractiveness and to the clarity of the volume.

GERWIG, GEORGE W., Ph.D., Secretary of the Board of Public Education, Pittsburgh, Pa.

Schools With a Perfect Score: Democracy's Hope and Safeguard. xi + 194 pp. The Macmillan Company, New York, 1918. **$1.10**

It is doubtful that there is any more general American tradition than the sufficiency and fundamental democracy, first, of the Little Red Schoolhouse of the cross-roads, and more recently of the Big Red Schoolhouse in the busy city. For many years the former was regarded as sufficient, and the rudiments embodied in the three R's were deemed all that the average man needed to know. This book discusses the complete school building of to-day in the light of our newly recognized requirements for the education of the hand and heart, as well as the head, and presents a program which leads from learning and doing on to wisdom, to high ideals and to worthy citizenship and character.

SAMPSON, E., Advertising Manager, The Daniels & Fisher Stores Company, Denver.

Advertise! vii + 240 pp. Illustrated. 1918. D. C. Heath & Co., New York. **$1.20**

"Advertising is a chain of ideas, carefully linked together, forcefully expressed, and scientifically calculated to produce a cumulative reaction upon a definite group of people." This small volume concisely treats of the numerous phases of advertising for the benefit of the new student in this field. Admirable for city officials and chamber of commerce secretaries contemplating advertising campaigns, and for all who use the press to sell their products.

BLUE, RUPERT, Surgeon General United States Public Health Service.

Annual Report of the Surgeon General of the Public Health Service of the United States: For the Fiscal Year 1918. Treasury Department, Document No. 2832, Public Health Service. 373 pp.

LEFFINGWELL, W. H., Editor, Author of "Scientific Office Management."

Making the Office Pay: Test Office Plans and Systems that Make for Better Results in Everyday Routine. Secured from the Offices of the Hundreds of Successful Business Men Who Are Using Them to Increase Profits by Cutting Costs. 1918. xiv + 389 pp. Illustrated. A. W. Shaw Company, New York. **5.00**

RELIABLE ROAD BUILDING MACHINERY

Is half the battle in making and maintaining roads and streets.



Our machinery is built for service. It is used and endorsed by road and street officials in every corner of the world.

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The Champion Rock Crusher, Mounted, with Elevator, Screen and Portable Stone Bin.

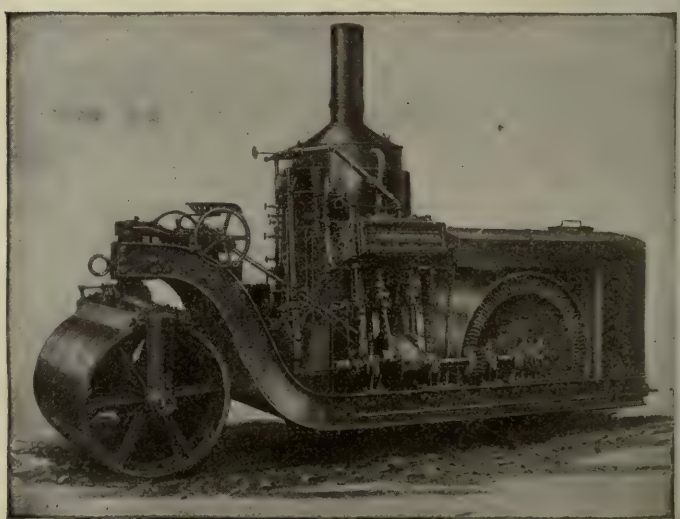
The ideal crushing plant for cities, counties, towns and contractors. Made in many sizes, from 50 to 300 tons daily capacities.

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Monroe, Paul, Ph.D., LL.D., Director School of Education, Teachers College, Columbia University, and Miller, Irving E., Ph.D., Department of Education, Washington State Normal School.

The American Spirit: A Basis for World Democracy. 1918. xv + 336 pp. The World Book Co., Yonkers, N. Y. **$1.00**

Tedder, George C.

American Methods in Foreign Trade: A Guide to Export Selling Policy. 1919. xii + 204 pp. McGraw-Hill Book Co., Inc., New York. **$2.00**

King, Hon. W. L. Mackenzie, C. M. G., Fellow of the Royal Society of Canada, former Minister of Labor, Canada.

Industry and Humanity: A Study in the Principles Underlying Industrial Reconstruction. 1918. xx + 567 pp. Houghton Mifflin Company, New York. **$2.15**

Spillman, W. J., D.Sc., Chief, Office of Farm Management, U. S. Department of Agriculture.

Farm Science: A Foundation Textbook on Agriculture. 1918. vii + 344 pp. Illustrated. The World Book Company, Yonkers, N. Y. **$1.28**

Americanization—The California Program.

The Commission of Immigration and Housing in California has seen the problem of Americanization as one of the outstanding tasks of this our reconstruction period, and, realizing that the subject is of vastly greater scope than the teaching of English to foreigners, has endeavored to formulate a comprehensive working program for the education of the people of California, both foreign-born and native, in the American ideals of liberty, democracy and cooperation. This program is presented in brief topical form in a 20-page pamphlet entitled "Americanization—The California Program," which can be obtained by addressing Paul Scharrenberg, Secretary of the Commission, 1 Underwood Bldg., 525 Market Street, San Francisco, Cal.

Population and Its Distribution.

Compiled from The United States Bureau of Census Figures. Second edition, revised and enlarged, October, 1918. A bound volume containing 218 pages of statistical tables of population by divisions, states, cities and towns, statistics showing the distribution of wholesale and retail dealers of the United States, classified by trades and by states, and statistics showing the distribution of farms and farm property in this country. Price, $2.50. (Published by the J. Walter Thompson Company, 244 Madison Avenue, New York.)

The Gary Public Schools.

The first six of a set of eight books on the various phases of the work of the Gary Schools are now available. The titles follow: "The Gary Schools—A General Account," by Abraham Flexner and Frank P. Bachman, 265 pp., 25 cents; "Organization and Administration," by George D. Strayer and Frank P. Bachman, 126 pp., 15 cents; "Costs," 86 pp., 25 cents; "Industrial Work," 204 pp., 25 cents; "Household Arts," 49 pp., 10 cents; and "Physical Training and Play," 35 pp., 10 cents. The other two books of the set, "Science Teaching" (10 cents), and "Measurement of Classroom Products" (30 cents) will be released shortly. (Published 1918 by General Education Board, 61 Broadway, New York.)

Mosquito Extermination in New Jersey.

The sixth annual report of the Atlantic County Mosquito Extermination Commission presents a brief history of the operations of the Commission for the year 1918, which include the draining of large areas of salt marshes and district inspection for breeding places of fresh-water mosquitoes. Photographs, drawings, tables and a map of Atlantic County set forth in detail the work that has been done and the work yet to be accomplished. 32 pp. (Send request for copy of this report to the Commission, 521 Guarantee Trust Building, Atlantic City, N. J.)

Fighting Snow.

A reprint of 15 important articles of the *Electric Railway Journal*, dealing with snow-removal problems and other winter problems that have been met with and overcome by traction companies in various parts of the country. 16 large-size pages, illustrated by diagrams, graphs and photographs. (Apply to the Editor of *Electric Railway Journal*, 10th Avenue and 36th Street, New York.)

War Memorials.

According to the new bulletin of the above title, issued by the Municipal Art Society of New York City, the most appropriate form of memorial to perpetuate the priceless services of our heroes is a memorial that continues to render service. Of even greater importance, the Society maintains, is the quality of beauty in whatsoever form of memorial is decided upon, for a beautiful memorial "will be a lasting joy for all who see it," and only a beautiful memorial is fit to commemorate the beauty of sacrifice and service. Many different types of beautiful and appropriate memorials are shown in the forty-two illustrations of this booklet, which discusses briefly the following three questions: (1) The Form of the Memorial, (2) The Quality, and (3) Proceeding to the Design. 22 pp. (Copies may be procured at 25 cents apiece by addressing the Society, 119 East 19th Street, New York.)

Hundreds of Cities Plan Memorial Buildings.

Reports which have already been received from hundreds of cities by the National Committee on Memorial Buildings indicate the rapidity with which the Liberty-Building movement is spreading thruout the country. A few of these reports from cities are listed in Bulletin No. 1, issued by the Committee. The bulletin also includes the following two articles reprinted from the January, 1919, issue of The American City: "Community Houses as Soldiers' and Sailors' Memorials," by Eugene Rodman Shippen, and "Provision for Art, Music and Drama in Liberty Buildings," by Christine Wetherill Stevenson. 16 pp. Price, 5 cents per copy. (Address the Commission at 261 Broadway, New York.)

Municipal Waste.

"The Report on Municipal Junk Yards and the Collection of Waste Paper and Municipal Waste Reclamation," published January, 1919, by the Municipal Reference Library, Chicago, covers the service of the departments of street cleaning and public works in a number of cities, and gives a very good idea of the value of materials reclaimed and sold by these departments in Chicago, Cleveland, Rochester and a number of other smaller cities, including several in Great Britain. Copies of this excellent report on waste collection may be secured by writing to Frederick Rex, Librarian, Municipal Reference Library, 1005 City Hall, Chicago, Ill.

State Pension Bills.

As a result of the findings of the Pension and Retirement Fund Commission of New Jersey, Assembly bills Nos. 194 and 438 have been submitted to the State Legislature. No. 194 provides a new retirement system for the public school teachers of the state to take the place of the unsatisfactory existing pension and retirement fund, and No. 438 authorizes the establishment of local retirement systems for police, firemen and other municipal employes, and also creates a state reinsurance association. Copies of these bills can be obtained free of charge upon request. (Write to Bureau of State Research, Clinton Building, Newark, N. J.)

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LETTER N

"Service, as we practice it," he says, "is a material part of the sale."

"Unquestionably every owner and every manufacturer of a tractor realizes the importance of SERVICE, and it may be fairly admitted on behalf of the manufacturer that his intention to render SERVICE is good, but the question for you to decide as a prospective purchaser of a tractor, is not alone the manufacturer's intention, but his ability to render the kind of service that insures continuous operation for your tractor

"Our ability to furnish SERVICE is measured by 25 operating factory branches, and two large distributors, located at central shipping and trading points in the United States and Canada. At each of these points complete stocks of spare parts are carried and competent SERVICE men are constantly employed. This means that no matter where you are located, you are within telephone distance of one of these branches, from which needed spare parts or a SERVICE man can reach you within a few hours

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"The value of this kind of SERVICE to the owner and operator is incalculable, and it has more than any other one thing built up this great business.

"So—SERVICE as we practice it, is a material part of the sale—tangible evidence of our desire to see each purchaser get the utmost value from our product"

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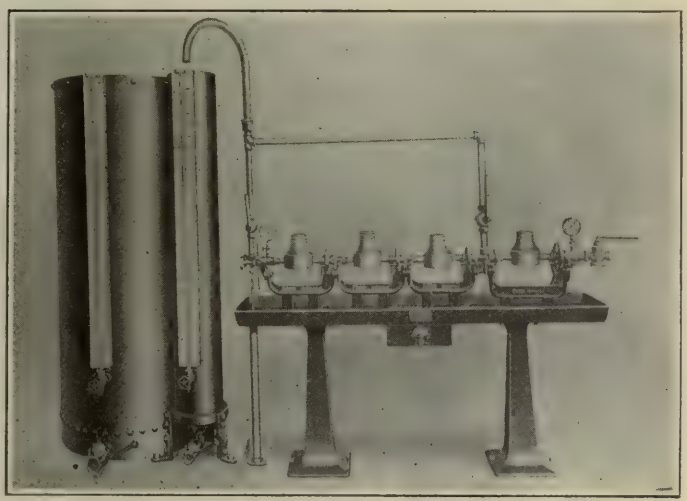
Methods · Materials · Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Water Meter Testers Will Save Your City Money

Let us suppose that the water department has five hundred meters in domestic service, and the average consumption is 250 gallons of water per day per meter, which is a conservative estimate. Now, suppose these five hundred meters average only five per cent slow. It is readily seen that 6,250 gallons per day is unaccounted for. Suppose we assume the very conservative rate of 20 cents per thousand gallons; we have a daily loss of $1.25, or $37.50 a month, —$450 per year.

This well illustrates the necessity of periodical inspection and repair of water meters. The Ford Meter Box Company, of Wabash, Ind., manufactures a meter testing machine which has been especially designed to supply the demand for a thoroly practical and comparatively inexpensive device that will test water meters accurately and rapidly. An illustrated catalog of the Ford water meter tester will be sent on application.



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A Sprayer for the Golf Course

For putting greens, medium-sized lawns, or newly seeded ground requiring a delicate, uniform spray, the "Young Fountain" sprayer, as shown in the accompanying illustration, is recommended by The Spray Engineering Company, of 93 Federal Street, Boston, Mass. This sprinkler has no moving parts and can



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Experience—the Greatest Builder



Honest manufacturing methods and carefully selected materials, alone will not make road-building machinery. It takes experience — experience in dealing with the most widely diversified problems. Experience that has proven what part or parts are subjected to the greatest strain.

The best materials and nearly a half-century of experience is the combination that has made Austin Western Machinery famous the world over as a "Super-Dependable" line.



The following Austin Western machines are giving profitable service in practically all parts of the world.

Road Graders
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Street Sweepers
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Motor Macadam Rollers

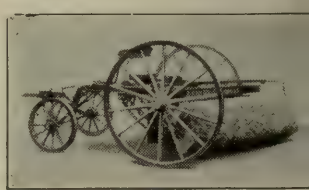
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More than ten times their combined purchases of all other rollers,

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e adjusted to distribute uniformly from 5 to
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connection with ½-inch to ¾-inch hose,
here the operating pressure is about 25
unds per square inch at the sprinkler, the
Young Fountain" will distribute about 10
llons per minute over an area about 30 feet
diameter.

This sprayer may be moved from one loca-
on to another without shutting off the water,
simply dragging it with the hose or a rope.
is so constructed that it cannot easily be
verturned.

✣ ✣

A Steel Flagpole with Revolving Top

We all like to see "Old Glory" flying free
a stiff breeze. But often the flag wraps
self around the pole instead. The Wal-
orth Manufacturing Company, of 801 East
irst Street, Boston, Mass., claims that the
atent ball-bearing, revolving halyard top used
ith the Walworth steel flagpole is so sensi-
ve that the flag will not wrap around the
ole or foul the halyards, but will fly free in
he slightest breeze, as well as in the heaviest



Walworth Steel Flag Pole (Hingham School)

ale. Another good point claimed for the
Valworth pole is its ability to withstand all
onditions of weather—rain or sleet, light-
ing or wind—without damage.

The Walworth steel flagpole is made in sec-
ions which telescope each other and are
drilled accurately to template for the inser-
ion of steel pins, which are furnished. Poles
re shipped knocked down for erection on the
round. Full directions are supplied for the
rection, which is said to be simple and
uickly accomplished.

The illustration herewith shows one of the
Valworth poles in use in front of a school
uilding.

"Wearproof" Traffic and Warning Signs

To-day's greatly increased traffic of pleasure cars and wide utilization of motor trucks over highways necessitates the use of proper guide-posts, signs and markers. These signs, if they are to create a favorable impression for any community, should be legible, neat and durable.

The Union Iron Products Company, of East Chicago, Ind., carries a full line of "Wearproof" traffic signs, street and highway markers and warning signals, made of heavy gauge



A WARNING TO AUTOMOBILISTS

metal and practically indestructible. The letters are countersunk and finished in aluminum, making them distinctly readable from a distance. All signs are subjected to several coats of a special rubber enamel paint preparation, which is baked on at a high degree of temperature, and will withstand all climatic conditions without cracking, peeling or flaking. After a few years of use "Wearproof" signs can be brightened up or "renewed" at a very small expense by retouching with paint enamel.

One of the company's special types of warning signals, the "No Parking Here" signal, is shown in the accompanying illustration.

✣ ✣

King Foundry Company Under New Management

The King Manufacturing Company, 927 Monadnock Bldg., Chicago, announces that it has succeeded the King Foundry Company, manufacturers of out-door street lighting equipment. The present company is planning to add several kindred lines.

✣ ✣

Chief Engineer of Dunn Company Receives Promotion

William C. Perkins, M. Am. Soc. C. E., for the past six years chief engineer of The Dunn Wire-Cut Lug Brick Company, of Conneaut, Ohio, has been elected chief engineer and general manager of the Eastern Paving Brick



How a Burch Stone Spreader Can Save You Time, Labor and Mone

By attaching a BURCH STONE SPREADER to your truck you can get an even depth of stone spread over the road at all times. This machine is economical and efficient in road building work, resulting in the saving of labor and material, sufficient in many cases to pay for the machine on the first job. By raising and lowering the gate you can regulate the amount of stone spread on the road. No dumping by guesswork or rehauling and shoveling. If you use a motor truck you cannot afford to be without one of these machines.

TRADE MARK

Send for descriptive matter NOW.

BURCH PLOWS WORKS COMPANY

Department C. **CRESTLINE, OHIO**

TRADE MARK

The 100% Street Flusher

TIFFIN

with the

2-Motor-System

THE Tiffin Street Flusher has made the *one* demonstration that actually proves its case.

It is right now showing by its service in many important cities of United States and Canada that:—

It does better work—at less cost—stands up longer—provides any needed pressure regardless of speed or grade.

Interesting street cleaning data upon request.



THE TIFFIN WAGON CO.

Tiffin **Ohio**

Representatives in principal cities.

nufacturers Association, comprising 35 npanies, with shipping territory covering nnsylvania, West Virginia, Maryland, Del- are, New Jersey, New York and the New gland States. Headquarters will be estab- ied in Philadelphia. Formerly resident en- ieer at Buffalo for the New York State ghway Commission, he went with The nn Wire-Cut Lug Brick Company in 1913, l during his connection with that company duties called him to all parts of the ntry.

✣ ✣

n Old Firm Adopts a New Name

The announcement of the change in the cor- rate name of the Flower-Stephens Manu- turing Company, of Detroit, to the Flower lve Manufacturing Company, is of interest prospective buyers of valves, hydrants and ier hydraulic supplies. The original firm James Flower and Brothers was founded 1852, to manufacture valves and hydrants, well as a line of ship equipment. The lat- line was eventually dropped until the time en this country entered the war, when the nt was placed at the disposal of the Gov- ment and was asked to furnish materials the ships built under the direction of the ipping Board, as well as to supply its reg- r product for camps and cantonments here l abroad. Propellers, throttle valves, bilge ing, ballast piping and valves, strut bear- s and stern bearings were turned out, suf- ent to equip twenty-five ships per month. th quality and quantity of the company's ducts received special commendation from U. S. Government.

Now that the emergency is past, the com- ny can again devote its facilities to the pplying of its regular line of fire hydrants, te valves, water gates, valve boxes, sleeves d valves, indicator posts, sluice gates, check lves, foot valves and hydraulic supplies.

✣ ✣

Neat Combination Post

An unilluminated street name sign is not of ich use in the dark, so the Buffalo Munici- l Equipment Company, located at Mutual fe Building, Buffalo, N. Y., manufactures a mbination post that will give good service th day and night. This post serves the uble purpose of lighting and directing the passer-by, and combines strength, permanence and legibility with a neat and attractive appearance, as is evidenced by the accompanying photograph. The company's latest booklet, describing and illustrating this and other useful traffic, warning and street name signs is obtainable free upon request.



A NIGHT-AND-DAY STREET SIGN

✣ ✣

Eagle Wagon Works Increases Its Facilities

The Eagle Wagon Works, of Auburn, N. Y., large manufacturers of dump wagons for contractors, also garbage and park wagons for cities, has during the past month purchased outright all manufactured and raw materials, good will and corporate name of the Glen Wagon & Car Corporation, of Cortland, N. Y.

The Cortland concern has for the past year been building a line of wagons similar to that of The Eagle Wagon Works, but has also been building a large line of four-wheel trailers for high-speed tractors and trucks, as well as a full line of roller bearings, steel tire trailers for caterpillars and traction engines, along with a choice line of reversible trailers used as spreaders on good road work. The concern will continue for the present to manufacture its line at Cortland with such additional facilities as can be given thru the assistance of The Eagle Wagon Works of Auburn, which will direct the policy and plans of the concern that it has just purchased, paying special attention, however, to the trailer part of the business. Harry M. Glen, the organizer of the Glen Wagon & Car Corporation, will remain with the concern.



A USEFUL MUNICIPAL VEHICLE

✣ ✣

Mr. Allen Manager of Asphalt Department

F. P. Allen has been appointed manager of the Fuel, Road and Asphalt De-

CLOW
CHICAGO

By Installing CLOW
Automatic Closets

you save water—and do away with needless maintenance and repair bills.



NOUVEAU JR.

Years of use, hundreds of testimonial letters, thousands of satisfied customers and any number of rapidly growing plumbing concerns all amply attest the merits of Clow Plumbing Fixtures.

This automatic closet flushes and cleanses thoroughly—yet requires 4 gallons less of water for each operation than the hand-pull type—saves 50% to 80% on your water bills. And we can prove it.

The valve is above the rim entirely outside of the bowl. A decided advantage.

Every Clow "Nouveau Jr." Automatic Closet is guaranteed for five years.

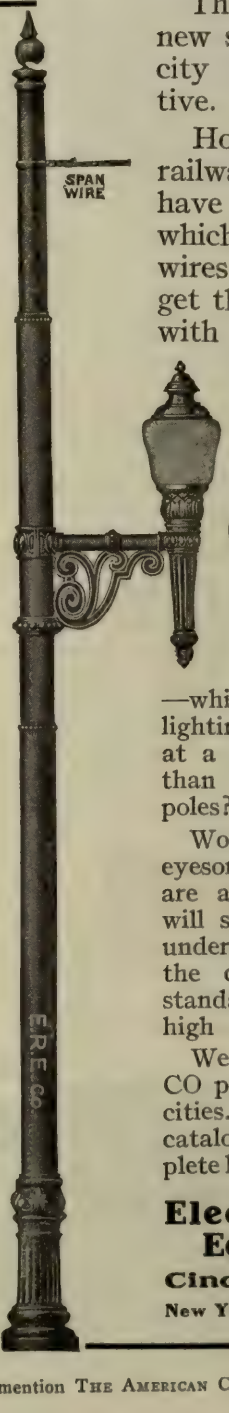
You can be supplied immediately as we are always prepared to make quick shipments.

For more information write the manufacturers,

James B. Clow & Sons
534-546 So. Franklin St.
CHICAGO, ILL.
Sales Offices
New York Milwaukee St. Louis
Philadelphia Minneapolis
Detroit San Francisco

CLOW
CHICAGO

Save Money on Your Street Lightin



The cost of install new standards in yo city may be prohi tive.

However, your str railway company mu have trolley poles which to hang th wires. Why not, th get them to co-opera with you in securing

ELRECO
Combinati Poles

—which will give you st lighting as fine as any at a much lower expe than the cost of separ poles?

Wooden poles are eyesore. ELRECO p are an improvement will save you the cost underground constructi the cost of extra la standards, the expense high maintenance costs

We have placed ELR CO poles in many lead cities. Let us send you catalogue showing our c plete line.

Electric Railwa Equipment Co
Cincinnati, O
New York Office, 30 Churc

tment by the Board of the Standard Oil of Indiana. Mr. Allen has been associated h the company for 33 years and succeeds W. H. Leonard, retired.

* *

Aerial Fire Truck

he accompanying picture shows a 75-foot al truck in service in Bloomington, Ill., e November, 1916. This truck is one of standard tractor-drawn aerials manufac-ed by the American-LaFrance Fire En-e Company, Inc., of Elmira, N. Y. In ad-on to the 75-foot aerial ladder an outfit ten ladders, ranging in length from 12 to 45 feet in length, is carried. The k also carries the standard equipment of k tools, and is equipped with a 9-foot wder life net, as well as a ladder pipe.

* *

eed and Satisfaction in e Joining

pipe that can be speedily and easily laid joined is described in a small illustrated klet entitled "Universal Pipe," issued by Central Foundry Company, 90 West eet, New York. The tale of "Making Pipe Joint One" is soon told. The Universal



FIG. 1



FIG. 2

e is laid with hub end forward, with the s in a horizontal plane, as in Fig. 1; the got end is entered in the hub; bolts are sed thru the lugs with heads pointing in posite directions, and a washer is placed ler each nut; an even tension is put on the ts by gradually screwing the nuts at the ne time, or each nut a little at a time:— joint is now complete, as in Fig. 2. This e is suitable for water, gas, sewage dis-al and fire department service, and for all er classes of pipe service both in buildings underground.



BLOOMINGTON'S AERIAL TRUCK

Arthur H. Blanchard to Lecture to Army Overseas

Arthur H. Blanchard, consulting highway engineer, has been appointed Chief of the Bureau of Public Works, Department of Citizenship, under the Army Overseas Educational Commission. General Pershing has requested the Y. M. C. A., thru its Commission, to take charge of the development of instruction and courses for all educational work of the Army overseas. The staff of the Bureau of Public Works and Army instructors in 500 post-schools thruout France will give lectures and courses relative to waterways, railways, highways, bridges, water-supply, sewerage, waste disposal, public utilities and irrigation. Special emphasis will be placed on the economic value of good roads to the nation, state, county and town, and on efficient methods of highway, railway and waterway transportation.

A NON-CLOG CLOSET

SPECIALLY SUITED FOR COMFORT STATIONS AND OTHER MUNICIPAL BUILDINGS



A closet that will not clog under ord nary adverse conditions because it constructed with an extra wide passag and without the horizontal shelf in th bottom near outlet of the bowl, commo to most bowls. This means a quick ge away. The seat is extra strong wit special reinforcement and designed to i sure cleanliness. Is furnished with e ameled high tank, exposed or conceale in hand or seat action form instead the flush valve shown. The Improve Trident will withstand abuse, maintai greater cleanliness and cause less repa than any closet outfit you can buy any price.

RUNDLE-SPENCE MFG. COMPAN

MILWAUKEE WISCONSI

PURO LIBERTY-

DRINKING FOUNTAIN



PAT. PENDING

ONLY Sanitary Drinking Fountain

PURO SANITARY DRINKING FOUNTAIN CO.

Haydenville Mass.

THE GAMEWELL FIRE ALA TELEGRAPH CO.



"Registered U. S. Patent Office"

Manufacturers of Fire Alarm and Police Signal TELEGRAPHS for Municipalities and Private Parties

The Gamewell system of to-day the outcome of the combined inventi genius and mechanical skill of ma whose valuable services the compa has been able to secure during t past fifty-seven years, in pursuance its policy of meeting at any cost t requirements of the varied conditio existing in different localities.

Correspondence Solicited.

General Office and Works:

Newton Upper Falls, Ma

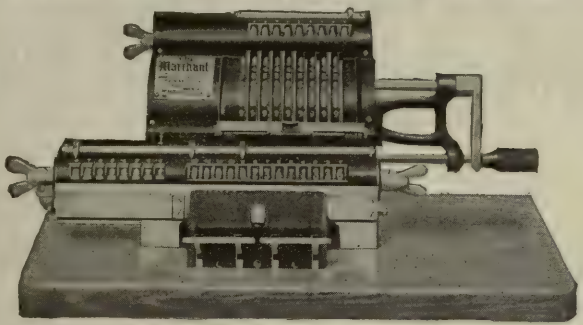
ATTENTION——
CITY CLERKS—ENGINEERS—AUDITORS

Are you getting a maximum of results in your calculating or are you spending your budget on wasteful hand figuring in handling the city records.

IMPLICITY

URABILITY

FFICIENCY



CAN BE HANDLED BY ANY ONE IN THE OFFICE

The Pony Marchant Calculator

ed and endorsed by City and County officials in every part of the United States.
"Guaranteed accuracy" in mathematics—shows the proof of every operation.

ARCHANT CALCULATING MACHINE COMPANY
IERYVILLE OAKLAND, CAL.

Eastern Sales Offices, 237 Railway Exchange Bldg., Chicago

eauty and Safety
For
y Parks, Play Grounds
Retaining Walls
ails and Courtyards
emeteries, Reservoirs
and Bridges
are both assured in

STEWART'S IRON FENCE
"The Standard of the World"



AGENTS WANTED

Chicago recognizes Stewart value and has installed approximately 45,000 feet of Stewart fence and 50 pairs of gates of the design here illustrated.

The Stewart Catalog will be a valued help to officials and others interested in city improvement.

he Stewart Iron Works Co., Inc., No. 527 Stewart Block CINCINNATI, OHIO.
The World's Greatest Iron Fence Builders

Request the Catalog
showing a wide selection of designs for purposes mentioned—also line of Lamp Standards, Bracket Lanterns, Settees, Vases and ornamental iron & wirework



Bi-Lateral Fire Hose construction keeps the rubber from cracking or leaking. If you want the best fire hose at the lowest cost per year of service, send for our catalogue.

Bi-Lateral Fire Hose Co.
326 W. Madison Street Chicago, Ill.

We specialize in Equipment for Motor Fire Apparatus

Complete Stock of General Fire Department Supplies

Sole Manufacturers of
Anderson-Hale Fire Station Door Openers

Estimates Cheerfully Given

THE ANDERSON COUPLING AND FIRE SUPPLY COMPANY
Kansas City Kansas

Dayton Airless Tire

GUARANTEED
2½ YEARS

Made exclusively for Fi
Department use.

Ride like Pneumatics
No Punctures
No Blowouts

Write for information

The Dayton Rubber Mfg. C
Dayton, Ohio

FABRIC FIRE HOSE

is of an unusually careful manufacture
WAX and PARA GUM TREATED

The lining is of fine Para Gum, hand made, four calendered, smooth bore or lap-jointed

Circular balance woven, each strand of cotton is treated to a bath of melted Wax and Para Gum, then cabled and woven into the jackets.

Absolutely waterproof, making the ideal hose for fire departments.

Treatment lubricates and solidifies the strands of cotton, assuring long wear.

Made in all sizes from 1 to 6 inches inside diameter.



FABRIC FIRE HOSE CO.
COR. DUANE & CHURCH STS., NEW YORK

Branch Offices

CHICAGO
ATLANTA
COLUMBUS, O.
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BINGHAMTON, N. Y.
PITTSBURGH
NEWARK, N. J.
MONTREAL
PROVIDENCE
DALLAS, TEX.

Patentee and Sole Manufacturer

Most Miles per Dollar

Firestone

FIRST

First to build truck tires—

First to build the channel type of truck tires—

First to build removable truck tires—

First to build the cup cushion truck tire—

First to build a complete line of tires for all commercial vehicles—

First to build a successful giant truck tire—

First with the grooved tread giant truck tire—

First with a practical, efficient giant cord tire equipment, including demountable rims—

First to establish 500 dealers with hydraulic presses and service facilities in leading cities throughout the United States.

The only manufacturer that makes the tire and rim complete. *Result*—

Half the truck tonnage of America is carried on Firestone Tires

FIRESTONE TIRE AND RUBBER COMPANY
FIRESTONE PARK AKRON, OHIO
BRANCHES AND DEALERS EVERYWHERE



Add Years

—to the life of each truck by specifying PNEUMATICS.

'NOBBY CORD' PNEUMATIC TRUCK TIRES—

—cushion the load

—permit high speed without vibration

—lower truck depreciation 50%

Unusual records—our biggest asset.

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES



ON

October 24, 1918, New York City Fire Department placed an order for 40,000 feet of Hamilton fire hose.

The kind of hose that New York City buys ought to be the kind that your city purchases.

Prices and particulars on application.

HAMILTON RUBBER MF COMPANY
ESTABLISHED 1870
TRENTON, N.

A Mechanical Masterpiece



IN the eyes of the engineer, a perfect machine is the noblest work of man; and in each class of machines there is one which most nearly reaches perfection in its simplicity, endurance, and ability to do its work.

Amongst tires, which are in fact and effect machines, THE ONE above others, and aloof in its excellence, is the Silvertown Cord Tire; and there are scientific, structural reasons to explain it.

For the Silvertown Tire is as scientifically beautiful to the eye of the engineer as its graceful outline is to the eye of the motorist.

Its special cable cord body—the cable cord runs diagonally across the width of the tire—is built to absorb the shock of the road much as a coil spring takes up the stress of a blow.

Its unique body, saturated through and through with rubber even to the core of cable cord, is thus insulated against inside frictional heat, which is the great destroyer of tires on high-power cars.

A look into the structure of the Silvertown, and you will see the scientific, structural reasons why Silvertowns give you an easier running car —easier to start—easier to guide.

You will understand why it increases engine power, and saves gasoline, all the time it is rolling up its long mileage.

Once you ride on Silvertowns, you always ride on the tires with the Twin Red Diamonds on the sidewall.

Buy Goodrich Tires from a Dealer

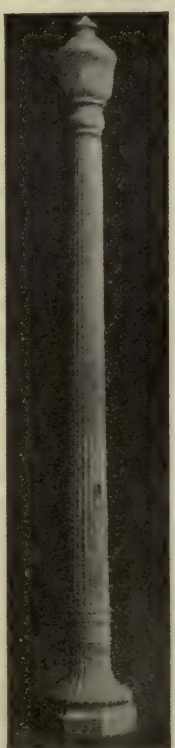
GOODRICH
TIRES
"BEST IN THE LONG RUN"

UNION METAL LAMP STANDARDS

With General Electric Lighting Units



Youngstown, Ohio, Union Metal White Way Lighting on West Federal St. 800 standards.



Design No. 792 with General Electric Form 9 Novalux Unit.

The Right Way for The White Way

Out of an experience dating back to the very beginning of modern street lighting, Union Metal Engineers are pointing out "the right way for the white way."
Union Metal leadership in street lighting systems is not an advertising boast but an engineering fact. It is based on our creative designing work with the country's leading engineers and architects—on our installations in over 1,000 principal cities—and lastly upon the exclusive Union Metal idea of a pressed metal standard—stronger, safer—less costly and far more beautiful than the old fashioned cast iron post. The Union Metal Organization are not simply manufacturers. Our Engineers assist in the design and layout of entire systems.

FREE MANUAL

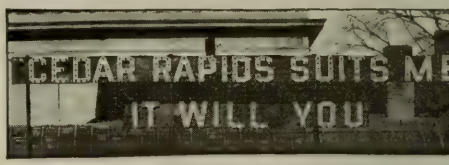
"Ornamental Street Lighting."

The Union Metal Mfg. Co.

Largest and Oldest Manufacturers of Ornamental Lighting Standards

Canton, Ohio

Boost YOUR Tow



Federal Electric Sig

Undoubtedly your city has unusual advantages alo commercial and industrial as well as residential lin But your neighbor also presents many advantag What method are you taking to compete with ad cent cities?

Advertise. Boost your own town. One way is do as Cedar Rapids did—put an electric sign near t railroad station, where every transient visitor and eve passenger may see it. This has proved profita for Cedar Rapids; why not for your town?

A Federal Electric sign sparkles by day and gliste by night. It costs very little to operate and livens up your city's general appearance. It dra people and business like a magnet.

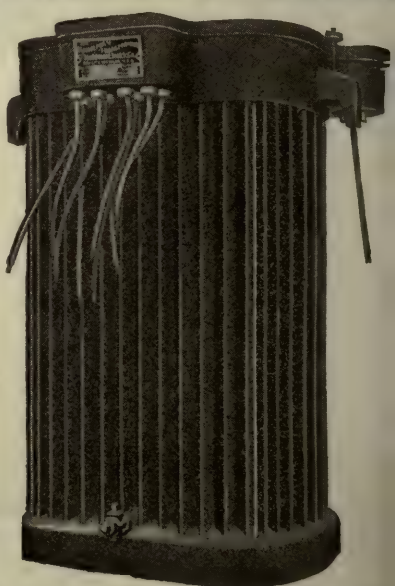
Write us today. We will send complete informati and prices without obligation to you.

Advertise *Your* City

FEDERAL SIGN SYSTEM (ELECTR
LAKE AND DESPLAINES STS. CHICA

Branches In All Large Cities

DISTRIBUTION TRANSFORMERS



FOR LIGHT AND POWER SERV
EFFICIENT LOW FIRST COST A
MINIMUM UPKEEP

KUHLMAN ELECTRIC C
BAY CITY, MICH.

Concrete Posts ★STAR★ Concrete Posts

When you buy STAR Concrete Lighting Posts, or Drinking Fountains, or Sun Dials, or Flower Urns, or Park Benches you buy QUALITY as well as the article itself. You buy long enduring service; you buy a product that is probably BETTER for its purpose and use; you buy highest quality in materials, design and workmanship. Our goods are made in heavy cast iron molds, reinforced with steel rods, of a mixture of materials and by a process known only to ourselves. The strength of our products equals and the appearance is similar to GRANITE



Type A

Fountain Designs are same as Posts



Type No. 1

Post Designs are same as Fountains



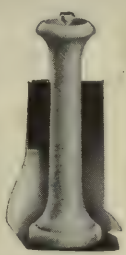
Type B

GOOD LIGHT STIRS PATRIOTIC ENTHUSIASM



Type No. 2

Illustrations here display only a few articles manufactured by us. We suggest writing for our new seventy page catalogue which shows our complete line.



Type No. 3

Prices quoted on complete installations.

e carry full line globes and fixres.

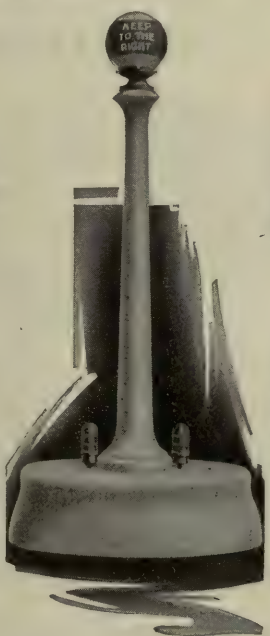
Iron conduit for wires runs through enter of each post. Sizes range om one to two inches according to equirements.

Reinforcing rods run through entire length of post and extend eighteen inches below base—these rods are then used as *Foundation Bolts*



Type D

Every article manufactured by us is guaranteed and will last a lifetime.



Safety Island Post

Compensators, high or low tension, multiple or series systems, Type C or any lamps or fixtures can be fitted to our posts.



Type G

CHICAGO CONCRETE POST COMPANY

608 So. Dearborn Street :: Chicago, Ill.



SIMPLEX STEEL TAPED CABLES

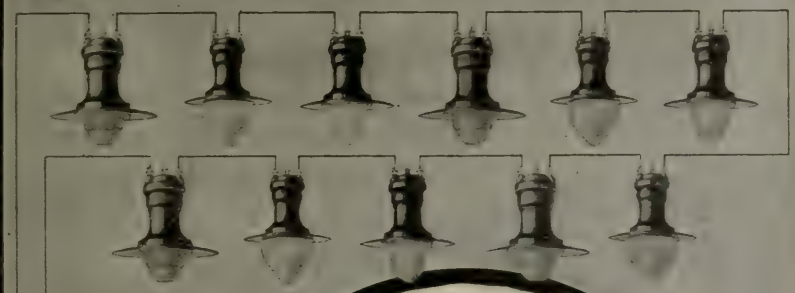


Hundreds of towns and cities today use SIMPLEX Steel Taped Cables to distribute current for street lighting. Satisfactory service is assured because the cables are designed for just this type of underground distribution.

Low cost of installation and maintenance make them desirable from an investment standpoint. Streets need not be torn up; pipes, manholes and catch basins need not be moved, and no conduit is required.

SIMPLEX WIRE & CABLE Co
MANUFACTURERS
201 DEVONSHIRE ST. BOSTON
CHICAGO SAN FRANCISCO

Reduce Lamp Renewals By Close Current Regulation



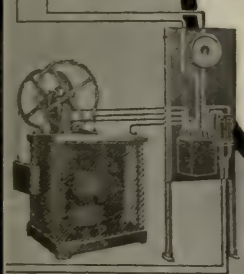
The City of Wheeling recently purchased eight

Westinghouse

Ventilated-Coil Type, Series Mazda

Regulators

and 700 Westinghouse Type CI (cast iron) Luxsolite Fixtures with skirted-type Holophane Refractors. This equipment replaced a like number of 9.6 ampere D. C. Series arc lamps operating on arc generators.



Westinghouse Station-Type Ventilated-Coil Mazda Regulators give such accurate current regulation that the lamp filament is afforded ample protection at all times against excessive current and surges on the series circuit. This protection means increased lamp life and lower operating costs.

Westinghouse

Fully described in Section 7-A, Part 2 of Westinghouse Annual Catalogue of Electrical Supplies

Westinghouse Electric & Manufacturing Co.

East Pittsburgh, Pa.

KOLESCH Surveying INSTRUMENTS

and Accessories

are designed to meet the especial needs of Municipal Engineers and can be depended upon for reliable and lasting service.

The No. 7710 transit shown is a sturdy instrument and particularly well suited for road, street and sewer work. It is worth investigating.



Transit 7670

We will be pleased to quote on your present needs

KOLESCH & CO., 138 Fulton St., New York

BUFF

ENGINEERING INSTRUMENTS

are the strongest, most accurate and longest-lived Instruments built. The close accuracy, high grade materials and superior workmanship have made the Buff the recognized standard. *Write for catalog No. 4.*



BUFF & BUFF MFG. CO. Jamaica Plains, BOSTON, MASS.

221 Lamartine Street — 231 N. Wells Street, Chicago, Ill.

The ELGIN Line

MOTOR DRIVEN STREET CLEANING MACHINERY

ELGIN SALES CORPORATION

501 Fifth Avenue, NEW YORK — 1340 Old Colony Bldg, CHICAGO

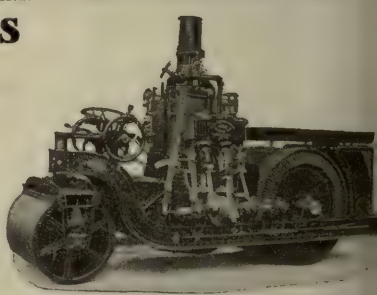
U. S. A.

ERIE TANDEM PAVING ROLLERS

Includes everything that makes for the best in Road Rollers. They are strong, simple in construction—durable and economical and easy to operate. Our first roller built in 1887 is still doing its "bit."

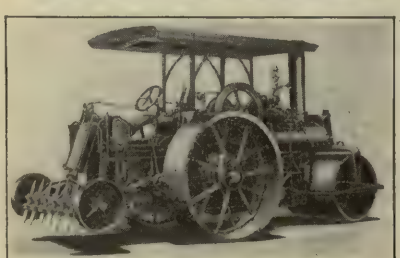
Erie Rollers are guaranteed against breakage or wear for 5 years.

Write for illustrated material.



THE ERIE MACHINE SHOPS — **ERIE, PA.**

QUALITY MACHINERY



With Pressure Cylinder Scarifier

BUFFALO PITTS ROLLERS

Are purchased by Discriminating buyers due to the many years of satisfactory service which they will render, the low repair costs and their general reliability.

ALL SIZES—ALL TYPES
STEAM AND MOTOR ROLLERS

Users of Buffalo Pitts and Kelly Springfield Rollers should equip rollers with Pressure Cylinder Scarifiers.

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LARGEST MAKERS OF PAVING BLOCKS IN THE WORLD



Metropolitan Block

Has brought **Dependable** Pavements to hundreds of cities in 21 of the United States and Canada—30 years' use has proved its case.



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The block that has helped make good brick pavements **famous.** Made from Shale **Naturally Adapted** to the manufacture of paving brick.

IF YOU WANT THE BEST IN PAVING BLOCKS, LET US FIGURE WITH YOU

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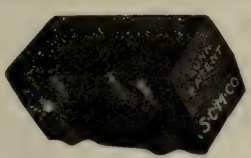
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pair Your Streets with LUTZ SURFACE HEATER

s asphalt and other bituminous pavements. ses the old and new material into a perfect t cements Asphalt on Granite, Brick, Cobther hard pavements. It makes re-surfacing ntenance easy and inexpensive.

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Everything Guaranteed

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Prevent fire and disease use the Safety first.

Catalogue sent on request.

SAFETY SANITARY RUBBISH BOX CO.

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GARBAGE CONTAINERS

While our "CANCO" garbage can in point of appearance and strength of construction is without a peer, yet our equipment—the most comprehensive in the country—is such that we can make any sort of garbage container at short notice.

We shall be pleased to estimate on any city or park requirement.

TRADE CANCO MARK

AMERICAN CAN COMPANY

Chicago NEW YORK San Francisco

With Offices in All Large Cities

ATTRACTIVE RUBBISH CANS FOR PARKS



This "Stump" Waste Basket is a favorite among cities desiring unique trash cans that present a neat appearance. The stand resembles a stump, and the can is easily removed for dumping. Built of corrugated metal with a double riveted bottom it outlasts other types of removable containers.

All kinds of park and cemetery refuse cans and supplies are illustrated in our catalog, which will be sent on request to any address.

THE STEEL BASKET COMPANY

708 So. Third St. Cedar Rapids, Iowa

"APEX" APPARAT

HOWARD GEORGE PLAYGROUND APEX OUTFITTER

SAFETY SIMPLI

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Flying Ring Frames, Traveling Ring Frames, Combination Playground Frames, Swings, Giant Strides, Horizontal Bars, Horizontal Ladders, See-Saws, Sliding Boards, Basket Ball Outfits.

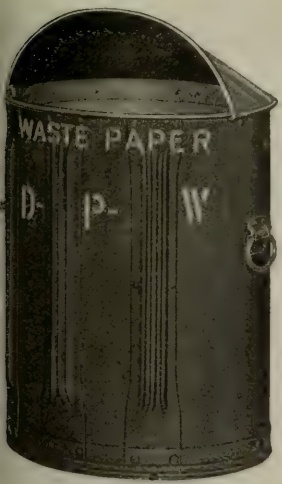
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Oval Rubbish Can



Reinforced Garbage Can

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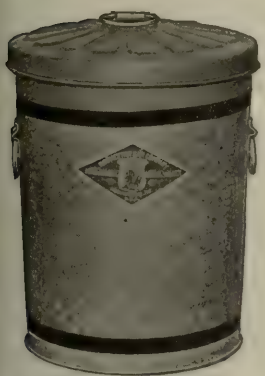
City Streets
Parks and Playgrounds

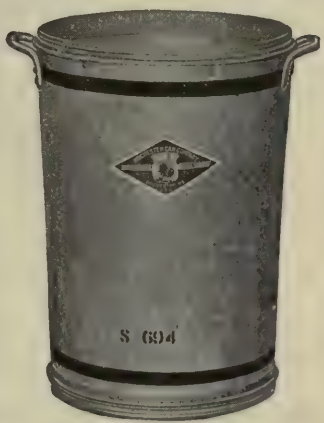
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For Your

Street Cleaning Department


Flaring Garbage Can



Street Cleaning Can

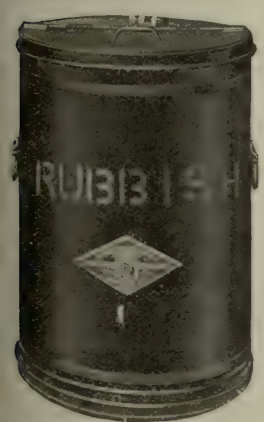
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Spring Top Rubbish Can



Round Rubbish Can

For Chamber of Commerce Secretaries Civic Club Secretaries And Other Men in Public Life Who Wish Their Success to Grow

The American City Bureau Summer School in Community Leadership will be held this year at Eagles Mere Park, Pa., July 14th to 26th.

You can enlist the experience of the entire nation in solving your community problems by attending this School. The instructors are intimately in touch with the nation's thought along these lines and are themselves exerting a big influence in making it. They are essentially "doers"—not theorists. Each has a strong individual record of success behind him.

They are the men who have made the American City Bureau, first the dominant and finally the only organization of its kind in the world. The Bureau has brought over one hundred strong Chambers of Commerce to their present efficiency. Its work, and that of the organizing concerns now merged with it, has touched the lives of over 24,000,000 people. It has played an important part not only in Chamber of Commerce campaigns but in many other vital and sometimes epoch-making community movements—such as new-charter campaigns, raising of war funds, an agricultural development project covering six states, an investigation of community problems for a foreign government, and others.

The course will deal broadly with:

Administration policies and structural necessities of modern Chambers of Commerce.

Sociological problems.

Economics

Municipal improvements

Personal help for the Secretary.

Throughout the course the emphasis is laid on the human forces that underlie all community problems—and through which all results must be obtained.

The strongest supporters of the Summer School are its past students. We can send you copies of letters from some of them—also the names of a good many more from whom you could get first-hand impressions.

There is more about the School in a pamphlet which you can secure by mailing us the attached coupon. Won't you do this?

AMERICAN CITY BUREAU
Tribune Building, New York

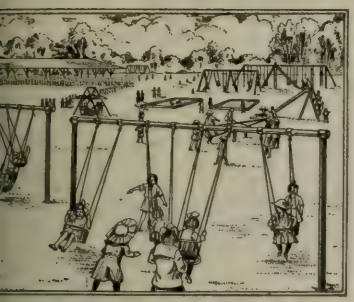
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GENTLEMEN:—

Send me your pamphlet regarding the Summer School in Communit Leadership.

NAME.....

ADDRESS.....



WHICH WILL IT BE IN A FEW YEARS ?



ARE YOU PLANNING A PLAYGROUND

for a single season or is permanency your object? This feature is worth considering when making price comparisons.

MEDART PLAYGROUND APPARATUS satisfies both user and owner. Its durable and rust resistant qualities make it stand as a permanent asset, ready for use at all times. It is fully described in our catalog "W" which will be mailed on request.

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MANUFACTURERS OF

Playground Apparatus **Gymnasium Apparatus** **Steel Lockers**

ALL MUNICIPALITIES NEED PLAYGROUNDS



The Playground not only betters the physical and moral tone of a city, but it is a real live investment. It cuts the perpetual moving population to a minimum which saves your manufacturer and your merchant.

American Apparatus will produce results.

WRITE FOR OUR CATALOGUE TO-DAY

AMERICAN PLAYGROUND DEVICE CO., W. 25th St., Anderson, Ind.

SPECIAL CATALOG SERVICE

We have established a catalog department for the purpose of supplyin catalogs and literature relative to supplies for municipal improvemen and invite those interested to check off on the list below, the lines c machinery or material on which they would like catalogs and pric lists. By using this blank you can secure a large amount of valuabl material without obligation or expense.

Asphalt
Asphalt Machinery
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Brick, for Paving
Cans for Ashes and Garbage
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Fertilizers
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Pumping Machinery
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Road Rollers
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Street Sprinklers
Street Sweepers
Street Trash Cans
Surveyors' Instruments
Tanks and Towers
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Tractors
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Please send me without expense or obligation on my part, catalogs and price list of material or machinery as checked above

NAME..... POSITION.....

ADDRESS.....



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No municipality, as well as no manufacturer, can consider that his patriotic duty is complete without giving employment to every returning soldier into civil life. It will be impossible for all to find a place in the shop, therefore it is up to the City Fathers to show due appreciation for the former defenders of true liberty.

You are called upon to improve your highways, streets and pavements. These will not be complete until the question of placing proper signs on them has been decided; and when considering h ghway and street signs it is for your interest to give first thought to attractiveness and permanency—in other words, don't do that which you will be required to do over again in a few years. All we ask of you is to request our catalog, showing combination street sign and lighting standards, traffic signs with electric light or without, highway and junction guideboards, school, danger and railroad-crossing warning signs that are always efficient and a decided credit to any community.

THE LEBANON MACHINE CO.

Highway Directory Engineers

LEBANON NEW HAMPSHIRE



FOR CLEANING OUT SEWER INLETS AND CESSPOOLS

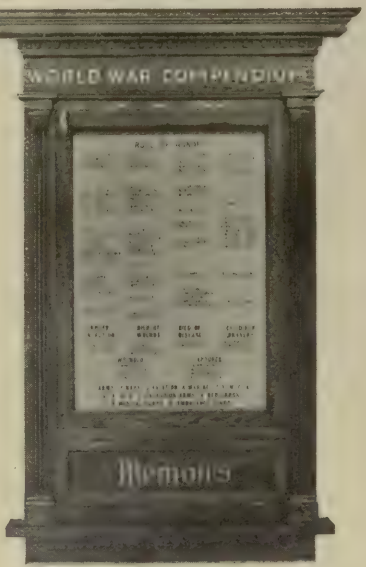


HERE is an outfit which every municipality will find useful in many emergencies. It consists of a diaphragm pump in connection with the Holzbog standard 54-foot cart. The cleaning of sewer inlets is an important matter, which is often neglected on account of the objectionable features of the old method of shovelling out the contents. With the Holzbog Sanitary Outfit, sewer inlets may be quickly cleaned in a sanitary manner, and the entire outfit can be secured at a most reasonable price.

Write us for catalog and price list today. We can furnish either one-horse two-wheel cars or two-horse four-wheel wagons which are water-tight, sanitary and easily cleaned.

Gasoline Engines furnished with pump if desired.

GEO. H. HOLZBOG & BRO. **Jeffersonville, Ind.**



PATENT APPLIED FOR

This Compendium has a capacity of 200 names.

It measures approximately 40"x72"

YOUR COMMUNITY'S PART
IN THE WORLD WAR

is worthy of remembrance and handing down to posterit by the unique and historically valuable method afforde by a

WORLD WAR COMPENDIUM

Artistic Design—Any Desired Finish
Solid Oak Cabinets
Polish Plate Glass Doors
Permanent Lettering in Genuine Gold Leaf
Soldiers' Names, Indices, Captions and Designatin Numerals Printed on White Baked Enamel Stee Plates Black on White or Gold on Black
Background of "Roll of Honor" a Series of Stee Bars, White Baked Enamel

The receptacle "MEMOIRS" holds a Loose Lea Leather Ring Book with a page for each "Boy" to per sonally chronicle his record and some of the little anec dotes that will constitute Local History.

All Sizes From 50 to 10,000 Names

Prices Right—Write For Prices

The Ashtabula Changeable Sign Co.
ASHTABULA, O.

Sole Mfrs. of
"IDEAL" World War Honor Rolls and Compendiums



MUNICIPALITIES

that contemplate extensive improvements of any kind, will appreciate the value of durable and everlasting traffic regulation and street signs. **"ENSCO"** signs are particularly desirable from every point of view. Guaranteed non-fading and non-rusting, they stand the wear of climatic conditions without damage, always looking well and giving 100% efficient service. **"ENSCO"** porcelain covered enameled iron signs are used for street signs, traffic regulation signs, number plates, milk carts and other license plates and sign purposes of any kind.

Send us Specifications for prices.
No obligation incurred.

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ENTERPRIS
All-Iron **FENCING** *Chain-l*



Now is the ideal time to make those long-desired fe improvements on municipal grounds. War-time strictions have been removed and we now have am stocks, prices are again moderate, and by order now, your fence will be erected before summer, wh you need it so much to protect and beautify par lawns and gardens. Write to-day for free catalog.

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2462 Yandes Street
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Write for this Free Catalog to-day



B. M. E.
TRAFFIC SIGNS

New process indestructible dis Raised letters. Any readin Thousands in use.

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AMELED SIGNS will shortly be available again, for municipal purposes. During the war period, our new six-acre plant was commandeered by our good "Uncle Sam," because of its location, capacity and equipment.

The same virtues which influenced our Government in taking advantage of our capabilities will be at your disposal for the development of your specifications covering street name signs, traffic signs, house numbers and Porcelain Enameled Iron municipal signs of every character.

Just as soon as our plant is released, we will resume the normal manufacture of our guaranteed product and you will be able then to again procure the standard municipal sign—"BALTO" Guaranteed Porcelain Enameled Iron Signs.

THE BALTIMORE ENAMEL & NOVELTY CO.
BALTIMORE, MD.



LYLE-SIGN
SILENT POLICEMEN

1—Cut-In Letters.
2—Round Re-Inforced Disks of Heavy ARMCO Iron firmly riveted to
3—A One-Piece Steel Standard 2⅜ Inches Diameter.
4—Heavy Cast Iron Base Plain, Electric Lighted or with Oil Lamps.

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SIMPLE AND DURABLE
EASILY READ
ATTRACTIVE

For business or residential districts we can furnish the best quality markers.

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Ancient victors claimed the *spoils* of war. We went to war that freedom should not perish from the earth. Our high ideal is the guarantee of a future of unprecedented, yet sound, prosperity. Never before have we, as a nation, been in such favor with fortune.

A larger view of life has come to us through lending our strength to saving the oppressed. As a more united and more broadminded people we are entering upon an era of unusual advancement.

Through all the avenues of commerce, there flows an increasing wave of industrial vitality. The same which spurred every patriot to hi most in time of war is now giving joy in winning a more substa future.

Into this greater future enters the phone, with its long-armed, my fingered service. It gives the farn voice in the city's market place; industry constant touch with merce and finance; the home security of instant and unlimited munication. Out of the p through the present, into the fu in unbroken, ever-increasing ser stretches the telephone.

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One Policy *One System* *Universal Ser*



Put His War Record in Imperishable Bronze

You are proud of the part your son, husband or sweetheart took in the recent war—why not make that record a permanent one by putting it on an

IMPERIAL
Bronze Honor Roll

Municipalities, Counties, Business Institutions, Churches and Lodges should perpetuate the fame of their soldier boys. No other material is so well adapted to this patriotic display of your war heroes' record as solid cast bronze. Sketches furnished free. In writing, give size of Honor Roll or Tablet desired, together with names and wording desired.

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smooth, compact, resilient and *dustless*, free from weeds, ruts and raveling, most economically—use Solvay Granulated Calcium Chloride. This clean, odorless, chemical salt quickly works into the road bed and maintains it in perfect condition.

SOLVAY
Granulated
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is more convenient to haul and distribute, cheaper to use, and easier to apply than any other dust layer, and also acts as a binder and weed-killer. It may be successfully applied by ordinary labor, with hand shovels or horse spreader, without interfering with traffic. Solvay is particularly adapted for use on streets and roads where a reduction in the cost of maintenance is an important factor.

You are invited to write for a copy of the "Solvay Road Book," mailed free, upon request.

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Cemcoat

The Enamel-like Wall Coating

Cemcoat is furnished in either Gloss or Flat.
Cemcoat has the combined virtues of enamel and paint.
It presents a tile-like finish.
It is washable, sanitary and durable.
Cemcoat should be used for all municipal buildings such as Schools, Bath Houses, Police Stations, Jails, etc.
Particularly adapted for safety lines on pavements.

Write for literature, color card, testimonials, etc.

Department 27

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Road Machine



MAKES DIRT FLY

Solves problems moving dirt, sand and gravel. One man and 4 horses do work of 4 men and 8 horses. Cuts cost of moving dirt 50% or better.

1½ Yards of Dirt In 30 Seconds



Self loader. Loads anywhere—no plowing necessary. Will spread dirt out or dump in piles. Strongly built. Trouble-proof. Durable. Write to-day.

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TRIPLE MOWER

Used on the Principal Golf Courses and Lawns of the Country.
Cuts both the Fairway and the Rough

NEW 1919 MODEL
INDESTRUCTIBLE
ALL STEEL FRAME

SHAWNEE MOWER COMPANY

Principal Office

149 West 49th Street, New York

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PORTLAND CEMENT

"One Source—One Mill—One Standard"

Every bag of Pennsylvania Cement, wherever obtained and for whatever purpose, has the same high quality required for government and public service work in which it is extensively used. Ask your dealer for Pennsylvania. If he cannot supply you, write direct to

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TRADE MARK

For All Concrete Floors

The concrete floors in your water-works, fire-houses, filtration plants, pump stations, etc. need Lapidolith to make them hard as granite—dustproof, waterproof and resistant to the action of most chemicals. Lapidolith should be used on all concrete floors, old or new. Results are guaranteed.

Used by leading industrial plants in every line in every city.

Write for literature, testimonials and free samples.

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Mfrs. of Connery
Non-Leakable Welded
"HELD BY WELD"
Road and Roofing, Tar
and Asphalt Kettles
Sizes, 10 to 1,000 Gallons
Styles, 17 Selections
Stock Carried
Immediate Shipment
Don't envy those
who have used these
Kettles for
Last 35 years.
FOLLOW SUIT
Durable—Economical
Practical
Write for Catalogue and
Prices to Kettle Dept.

STYLE A OR B
STYLE A—125-175-225 Gallons
STYLE B—200-400-500 Gallons



REILLY'S IMPROVED PERMANENT CREOSOTE OIL

WOOD PAVING BLOCKS, treated with this oil, will never bulge, bleed or absorb water; it has never failed to make good. Specify this oil in your paving contracts and be *sure of results.*

Sample and specifications on request.

The Republic Creosoting Co., Indianapolis, Ind.
Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

IS your city interested in ASH WAGONS?



We make a specialty of them in

3
4
5 } Yard Capacity

also Bottom Dump Semi Trailers and fast and slow Moving Trailers for City Work

WRITE TO-DAY

THE EAGLE WAGON WORKS
AUBURN NEW YORK
also Successors to
The Glen Wagon & Car Corp.
CORTLAND, NEW YORK

Save Your Trees

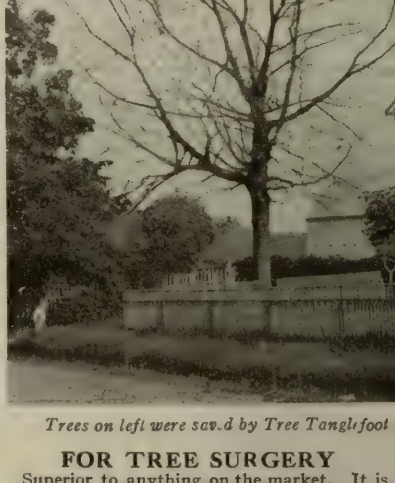
It takes a lifetime to grow a fine shade tree. A colony of leaf-eating insects can destroy it in one season.

Tree Tanglefoot will effectually protect shade and fruit trees from most of our destructive insect pests, i. e.:

Canker worms **Tussock moths**
Climbing cut worms
Brown-tail moths **Woolly aphis**
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One application stays sticky three months and longer, outlasting ten to twenty times any other substance. Easily applied with a wooden paddle. One pound makes about ten lineal feet of band. It will not soften, run or melt, yet is always elastic, expanding with growth of tree. Effective rain or shine. Needs no mixing, used exactly as bought.

Endorsed by prominent Park and Cemetery Superintendents.



Trees on left were saved by Tree Tanglefoot

FOR TREE SURGERY

Superior to anything on the market. It is the best application after pruning or trimming. It will waterproof crotch, cavity or wound when nothing else will.

Sold generally by Seedsmen.

Price: 1 lb. cans, 50c; 3 lb. cans, $1.45; 10 lb. cans, $4.50; 20 lb. cans, $8.75; 25 lb. wooden pails, $10.50.

Write or free illustrated booklet on leaf-eating insects.

The O. & W. THUM COMPANY, 153 Straight Avenue, Grand Rapids, Mich.

Manufacturers of Tanglefoot Fly Paper and Tree Tanglefoot (122)

HOTEL MARTINIQUE

BROADWAY, 32d & 33d STS., NEW YORK

One Block from Penna. Station. Baggage Transferred Free.
Equally Convenient for Amusements, Shopping or Business.
Direct Entrance to B'way Subway and Hudson Tubes.

"The House of Taylor"

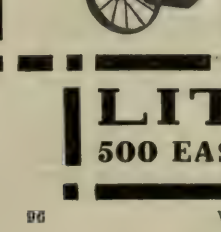
600 ROOMS 400 BATHS

Rates: From $2 Per Day

A SPECIALTY
155 PLEASANT ROOMS With Private Bath
$3 Per Day

The Martinique Restaurants Are Well Known for Good Food and Reasonable Prices

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For making patches that stick and wear like part of the road, use a Littleford Maintenance Tar and Asphalt Heater No. 69 illustrated.

No more patches of just loose stone thrown into a hole, to be scattered by the first vehicle that comes along. Make permanent patches. Paint the stone with hot tar or asphalt and then fill in the voids with a hot filler. The patch is there to stay.

The No. 69 Heater is the heater to help you do this. Strongly built and very convenient to move about.

Made in three sizes. Capacity 65 to 165 Gallons.
Write for circulars and prices.

LITTLEFORD BROS.

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A very large volume of Thorburn Seeds re furnished for parks and cemeteries.

Write us for catalog and let us know your equirements: and your letter will have our rompt and careful attention.

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SHADE TREES for CITY PLANTING

The war is over. Interrupted Park and Boulevard work, and the planting of Shade Trees must be resumed.

Our nurseries have been kept up to their usual efficiency.

Send for a copy of our Spring Wholesale Catalogue of all kinds of nursery stock.

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Wholesale Nurserymen
DRESHER (Near Philadelphia) PA.

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URPEE'S ANNUAL for 1919 is considered the Leading American Seed Catalog and is a complete guide for e Flower and Vegetable garden. It will be mailed free to those who write for it. Write for your copy today. post card will do.

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Everything for Parks, Cemeteries and Private Places. Largest general assortment in America. Personal inection invited. Special prices on car load lots. Switch from New York Central Ry. to our grounds. 1200 acres. ease to quote on your want list.

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Landscape Dept., 627 Engineers Bldg., Cleveland, Ohio



W. & T. SMITH COMPANY

NURSERY STOCK AT WHOLESALE

Send for Catalogue and Price List

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Offer a very complete line of Trees, Shrubs and Ornamental stock for all kinds of Landscape work. Send your want lists for estimate. Trade list on application.

THE DONALDSON CO.
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Framingham Nurseries

Ornamental trees, shrubs and evergreens for street and park planting.

FRAMINGHAM—MASS.

BOBBINK & ATKINS

World's Choicest Nursery and Greenhouse Products

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Ornamental Trees, Shrubs, and Hardy Perennials

A complete stock.
Quality unexcelled.
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Dwarf form of Barberry Thunbergii. Hardy wherever Japan Barberry grows.

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Box-Barberry lends itself most happily to low edging, for Formal-gardens; also makes a beautiful low hedge. Summer color, pleasing light green; Autumn, dazzling red and orange. Available stock limited. Orders filled in rotation received.

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NEW HAVEN CONNECTICUT
1919 Catalog now ready.

Before making purchases consult the Municipal Buyer's Guide

See Page 104

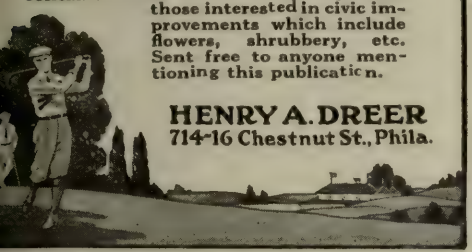
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We put business methods in park tenance and development.
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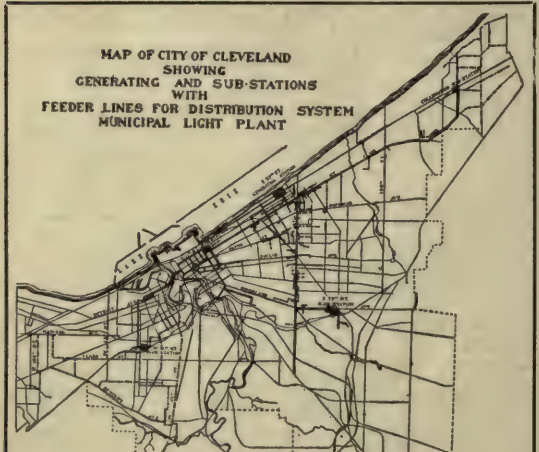
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THE GREENSKEEPER'S DREAM COMES TRUE
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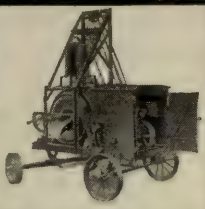


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Simple design and sturdy construction mean years of dependable, trouble-free service. Unequalled for speedy, thorough, economical mixing. Engine is frost-proof, fool-proof and durable. Burns gasoline or kerosene. Fuel bills cut to the minimum. PRICE AND PERFORMANCE will please every buyer.

Bulletin No. 7 gives complete information. Write for it today.

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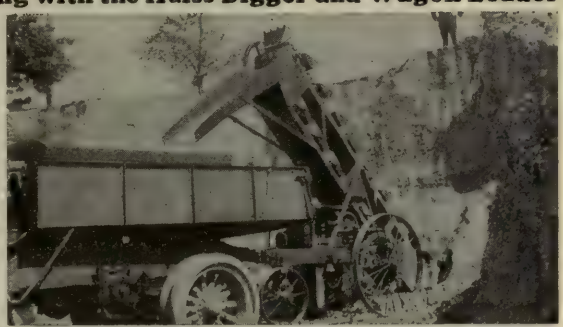
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Haiss machines have gained an enviable reputation as a saver of time, labor and money. Every municipal and county official should investigate the **Haiss Digger and Wagon Loader** before buying other equipment. Saves the labor of several men and often pays for itself on the the first job or two.

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Salary $3,000 more or less. Apply to Secretary Chamber Commerce, Hays, Kansas.

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Fifteen years' experience as Manager of Public Utilities, Superintendent of Streets, Water, Sewers, etc., wants similar position. Competent to handle both business and professional activities.

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desires connection with some manufacturing firm in the municipal or fire department field. Has had thirteen years' experience in the selling and manufacturing end and has a wide acquaintance with heads of municipal departments in all parts of the country, having a personal acquaintance with many of the leading fire chiefs, mayors, etc. If there is an opening in your organization for a man of this experience and acquaintance, please communicate with Box 67, care THE AMERICAN CITY.

The Municipal Buyers' Guide

A classified reference index of advertisers in this issue of The American City

The alphabetical index of advertisers which follows this list (see page 114) will give you the page numbers of all advertisements, thus enabling you to secure the full address of the advertisers, as well as other information which may be of value.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 114

Aerial Ladder Trucks.
American-La France Fire Engine Co.

Air Compressors.
Allis Chalmers Mfg. Co.
General Electric Co.
Worthington Pump & Mach. Corp.

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Studebaker
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White Co., The

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Bond & Co., Harold L.

Brass Goods.
Anderson Coupling & Fire Sup. Co.
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Flour City Ornamental Iron Co.
Smith Co., A. P.
Union Water Meter Co.

Brick, For Paving.
Dee Co., Wm. E.
Metropolitan Paving Brick Co
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Pittsburgh-Des Moines Steel Co.

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Four Wheel Drive Auto Co.
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American City Bureau.

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Newport Culvert Co.
Rochester Can Co.
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Portland Cement Assn.

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Carey Co., Philip.

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Chicago Concrete Post Co.

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National Water Main Cleaning C

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Simplex Valve & Meter Co.

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Clark Co., H. W.

Current Meters.
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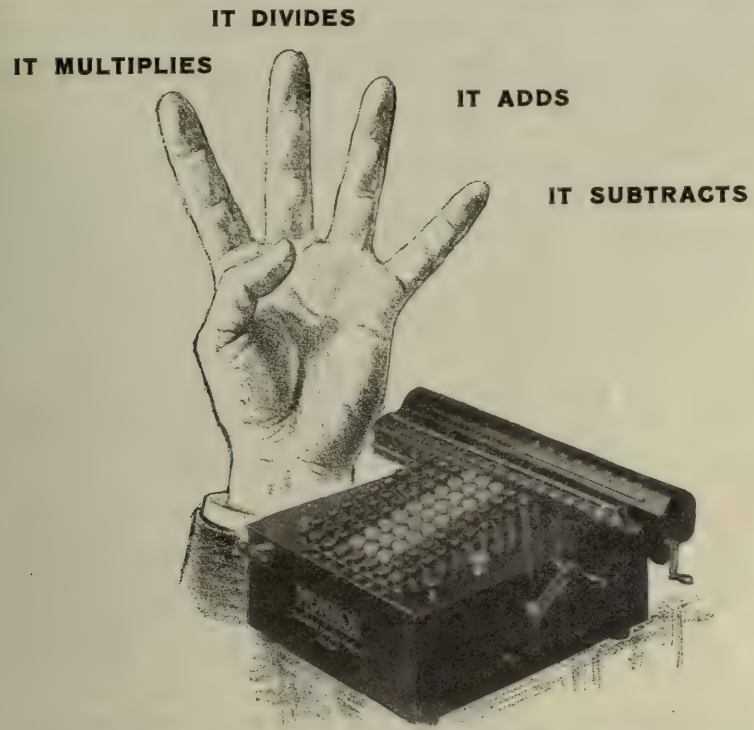
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Electro Bleaching Gas Co.

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Economy Drawing Table & Mfg. Co.
Kolesch & Co.

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Eagle Wagon Works
Glen Wagon & Car Corp.

Dump Carts and Wagons.
Austin-Western Road Machy. C
Eagle Wagon Works.
General Motors Truck Co.
Glen Wagon & Car Corp.
Holzbog & Bro., Geo. H.
Studebaker
Watson Wagon Co.

Continued on page 106



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For example: In a problem of multiplication—set the number to be multiplied on the keyboard and give the crank a few quick turns. The result appears at once in the lower dial of the carriage while the multiplier will be found in the upper dial. Thus all three factors of the operation remain in full sight as a visible check of accuracy.

No special training needed—it allows anyone in your office to handle payrolls, invoice extensions, percentages, engineering formula, etc.

MONROE
Calculating Machine

The "SHOW ME" Coupon
Mail it Today

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☐ Send the Monroe Book of Facts and Information how your machine will save time on our figure work.

☐ Give us a demonstration in our own office.

Firm Name.....

Individual's Name.....

Address.....

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 114

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Dustoline for Roads Co.
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Standard Oil Co. of N. J.

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Cutter Co., George
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General Electric Co.
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Electric Transformers.
Kuhlman Electric Co.

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Baltimore Enamel & Novelty Co
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Albright & Mebus.
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Ballard & Co., F. W.
Bamman, F. C.
Black & Veatch.
Blanchard, A. H.
Burnap, Geo.
Burns & McDonnell.
Caird, James M.
Chester & Fleming.
Cravath, J. R.
Dunham-Clarin Co.
Flood, Walter H.
Fuller & McClintock.
Gage, Benj. B.
Gannett, Seelye & Fleming.
Greeley, Samuel A.
Hansen, A. E.
Harding, James.
Hazen, Whipple & Fuller.
Hering, Rudolph.
Higgins, J. Wallace.
Hopkins, Charles C.
Kesner, Myron A.
Knowles, Morris.
Ludlow, J. L.
MacKrell, Edwin A.
Marr Green & Co.
Mitchell, Hugh C.
Pollock & Taber
Potter, Alexander.
Potts, Clyde.
Robinson, Geo. L.
Scofield Engineering Co.
Stillman & Van Siclen
Taylor, Henry W.
Waddell & Son
Wingfield, Nisbet

Engine, Gas. (See Gas Engines.)

Exhibition Material
Educational Exhibition Co.

Expansion Joint Material.
Barber Asphalt Paving Co.
Barrett Co., The.
Carey Co., Philip
Robertson Co., H. H.
Tuscon Steel Co.

Fencing.
Enterprise Iron Works.
Flour City Ornamental Iron Co.
Stewart Iron Works Co.

Fertilizers.
Dreer, Henry A.

Filters-Feed Water.
Pittsburgh Filter Mfg. Co.

Filtration Plants.
N. Y. Continental-Jewell Filtra. Co.
Norwood Engineering Co.
Pittsburgh Filter Mfg. Co.

Fire Alarm Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Fire Alarm Signal, Electric.
Federal Sign System.

Fire Alarm Signals, Steam.
Union Water Meter Co.

Fire Alarm Systems.
Gamewell Fire Alarm Telegraph Co.

Fire Department Apparatus.
American-LaFrance Fire Engine Co.
Autocar Co., The
Federal Motor Truck Co.
General Motors Truck Co.
Studebaker.
White Co., The.

Fire Department Supplies.
American La France Fire Engine Co
Anderson Coupling & Fire Sup. Co.

Fire Escapes.
Flour City Ornamental Iron Co.

Fire Extinguishers, Chemical.
American-LaFrance Fire Engine Co.
Anderson Coupling & Fire Sup. Co.

Fire Hose.
Anderson Coupling & Fire Sup. Co.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Rubber Co., B. F.
Hamilton Rubber Mfg. Co.

Fire Pumps.
Worthington Pump and Machinery Corporation.

Flag Poles.
Flour City Ornamental Iron Co.
Walworth Mfg. Co.

Flexible Joints.
U. S. Cast Iron Pipe & Fdry. Co.

Fountains.
Clow & Sons, James B.
Flour City Ornamental Iron Co.
Imperial Brass Mfg. Co.
Puro Sanitary Drinking Foun. Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Furnaces, Melting.
Leadite Co.

Garbage Cans—See Cans for Ashes and Garbage.

Garbage Wagons.
Austin-Western Road Machy. Co.
Autocar Co., The
Eagle Wagon Works
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Glen Wagon & Car Corp.
Holzbog & Bro., Geo. H.
Studebaker.
Watson Wagon Co.
White Co., The.

Gas, Chlorine.
Electro Bleaching Gas Co.

Gas Engines.
Allis-Chalmers Mfg. Co.
Foos Gas Engine Co.
Worthington Pump & Mach. Corp.

Gaskets.
Leadite Co.

Gas Meters.
General Electric Co.
Pittsburgh Meter Co.

Gasoline Pumping Engines.
Bond Co., Harold L.
Worthington Pump & Mach. Cor

Gasoline Storage Tanks.
Bowser & Co., Inc., S. F.

Gates For Parks and Cemeteries.
Enterprise Iron Works.
Stewart Iron Works Co.

Gauges, Loss of Head, Rate of Flo
Simplex Valve & Meter Co.

Gauges—Surface, Reservoir a Special Water Works.
Clark Co., H. W.
Simplex Valve & Meter Co.

Graders.
Austin-Western Road Machy. Co
Lyle Corrugated Culvert Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Union Iron Products Co.
Zieg Mfg. Co., T. B.

Graphite.
Dixon Crucible Co., Joseph.

Grass Seed.
Burpee Co., W. Atlee.
Dreer, Henry A.
Thorburn & Co., J. M.

Health and Amusement Device
American Playground Device C
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg. Co., Fred.

Heating Kettles.
Connery & Co., Inc.
Littleford Bros.

High Pressure Hydrants.
Clow & Sons, James B.
Smith Co., A. P.

Hoists.
Allis-Chalmers Mfg. Co.

Hose.
Anderson Coupling & Fire Sup. C
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Rubber Co., B. F.
Hamilton Rubber Mfg. Co.

Hot Mixers.
Barber Asphalt Paving Co.

House Numbers.
Baltimore Enamel & Novelty Co
Buffalo Municipal Equipment C

Hydrants.
Clow & Sons, James B.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Norwood Engineering Co.
Rensselaer Valve Co.
Smith Co., A. P.
Wood & Co., R. D.

Indicator Posts.
Clow & Sons, James B.
Columbian Iron Works.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.

Insulating Materials.
Barrett Co., The.
Carey Co., Philip.
General Electric Co.
Westinghouse Electric & Mfg C

Insulated Wire and Cable.
General Electric Co.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Continued on page 108

praco Giant Park Sprinkler



On hand truck. Covers area 75 to 125 feet. Uniform distribution of 50 to 150 gallons per minute.

Thorough irrigation due to the Spraco Nozzle with the Centre Jet. 100% efficiency.

Spray Engineering Co.
Boston

SPRACO PRODUCTS



Fig. 101.

BOWSER
ESTABLISHED 1885

PROTECTION PAYS!

Bowser Protection from volatiles means storage within walls of steel—delivery by all metal pumps.

Bowser Protection pays because it prevents fire, loss of life and property. Underground steel tanks provide a storage immune to fire or explosion. The all metal pumps enable liquid to be delivered from tank directly into container, eliminating over-measure, leakage and spillage.

Write for information.

S. F. BOWSER & CO., Inc., Ft. Wayne, Ind., U.S.A.

Canadian Office and Factory, Toronto, Ontario

LONDON: 32 Victoria St., S. W. 1.
HAVANA: Lonja del Comercio 427
PARIS: 5 Rue Denis-Poissons
SYDNEY: 6 Castlereagh St.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 114

Jail Cells and Jail Work.
Stewart Iron Works Co.
Flour City Ornamental Iron Co.

Joints, Flexible.
Coldwell-Wilcox Co.

Kettles, Tar and Asphalt.
Connery & Co., Inc.

Landscape Architects.
American Park Builders
Arnold, Sheffield A.
Arnold & Tripp.
Cole, Louis S.
Cullen, Wm. E.
Davey Tree Expert Co.
Higgins, J. Wallace.

Lapidolith.
Sonneborn Sons, Inc., L.

Lavatory Specialties.
Imperial Brass Mfg. Co.

Lawn Mowers.
Austin Western Road Machy. Co.
Pennsylvania Lawn Mower Works.
Shawnee Mower Co.

Lawn Sweepers.
Everwear Mfg. Co.
Pennsylvania Lawn Mower Co.

Lead Furnaces & Caulking Tools.
Smith, A. P.

Leadite.
Leadite Co.

Lead Wool.
United Lead Co.

Leak Finders.
Clark & Co., H. W.
Pitometer Co.

Lighting Standards.
Chicago Concrete Post Co.
Clow & Sons, James B.
Cutter Co., George.
Electric Railway Equipment Co.
Stewart Iron Works Co.
Union Metal Mfg. Co.

Liquid Chlorine.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Electro Bleaching Gas Co.
Great Western Electro Chem. Co
Hooker Electrochemical Co.
Pennsylvania Salt Mfg. Co.
Wallace & Tiernan Co., Inc.

Lubricants.
Dixon Crucible Co., Joseph.

Manhole Covers.
Clark Co., H. W.
Clow & Sons, James B.
Columbian Iron Works.
Flour City Ornamental Iron Co.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Memorials for Soldiers, Etc.
Ashtabula Changeable Sign Co.
Flour City Ornamental Iron Co.
Imperial Brass Co.
Lebanon Machine Co.

Merry-Go-Rounds.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg., Co. Fred.

Metal Preservatives.
Dixon Crucible Co., Joseph.

Meter Books.
Buffalo Meter Co.
Pittsburgh Meter Co.

Meter Boxes.
Buffalo Meter Co.
Clark Co., H. W.
Clow & Sons, James B.
Columbian Iron Works.
Ford Meter Box Co.
Hersey Mfg. Co.
McNutt Meter Box Co.
Pittsburgh Meter Co.

Meter Couplings.
Clark Co., H. W.
Ford Meter Box Co.
McNutt Meter Box Co.
Pittsburgh Meter Co.

Meter Holding Devices.
Ford Meter Box Co.
McNutt Meter Box Co.

Meter Testers.
Buffalo Meter Co.
Clark Co., H. W.
Ford Meter Box Co.
Neptune Meter Co.
Pittsburgh Meter Co.

Meters—See Water and Gas Meters.

Meters for Oil and Gasoline.
Bowser & Co., S. F.

Motor Trucks.
Autocar Co., The
Couple-Gear Freight Wheel Co.
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Motor Fire Apparatus—See Automobile Fire Apparatus.

Motor Truck Trailers.
Watson Wagon Co.

Natural Asphalt.
Barber Asphalt Paving Co.

Nurseries.
Andorra Nurseries.
Bobbink & Atkins.
Donaldson Co.
Dreer, Henry A.
Elm City Nursery Co.
Kohankie & Son, Henry.
Meehan Co., Thomas.
Riverview Nursery & Seed Co
Smith Co., W. & T.
Storrs & Harrison Co.

Oil Tanks.
Bowser & Co., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pacific Tank & Pipe Co.

Ornamental Metal Fencing.
Flour City Ornamental Iron Co.

Packing.
Carey Co., Philip.

Paint, Preservative.
Barrett Co. The.
Dixon Crucible Co., Joseph.
Sonneborn Sons, Inc.

Paint Gun (Pneumatic).
Spray Engineering Co.

Park Benches.
American Playground Device Co.
Enterprise Iron Works.
Stewart Iron Works Co.

Park and Lawn Sprinklers.
Buckner, W. A.
Spray Engineering Co.

Paving Inspection.
Allentown Testing Laboratories.

Paving Machinery and Tools.
Barber Asphalt Paving Co.
Erie Machine Shops
Equitable Asphalt Maintenance Co.
Warren Bros. Co.

Paving Materials. (See also under Brick and Cement.)
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Bitoslag Paving Co.
Carey Co., Philip
Robertson Co., H. H.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.
Warren Bros. Co.

Paving Mixers.
Barber Asphalt Paving Co.
Warren Bros. Co.
Worthington Pump and Machine Corporation.

Paving Mixtures.
Barker Asphalt Paving Co.
Standard Oil Co. of Indiana,
Standard Oil Co. of N. J.

Pencils, Drafting, Office.
Dixon Crucible Co., Joseph.

Pipe.
American Cast Iron Pipe Co.
Cast Iron Pipe Pub. Bureau, R. McWane, Sec.
Central Foundry Co.
Clow & Sons, James B.
Donaldson Iron Co,
Glamorgan Pipe & Foundry Co.
Lynchburg Foundry Co.
Massillon Iron & Steel Co.
Pacific Tank & Pipe Co.
U. S. Cast Iron Pipe & Foundry C
Warren Fdry. & Machine Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A

Pipe Covering.
Carev & Co., Philip.
Pacific Tank & Pipe Co.

Pipe Cutters.
Smith Co., A. P.
Strickler & Bros., W. W.

Pipe Joint Compound.
Dixon Crucible Co., Joseph.
Pacific Flush Tank Co.

Pipe Jointing Materials.
Leadite Co.
United Lead Co.

Pipe Locators.
Clark Co., H. W.

Pipe (Riveted Steel.)
Pittsburgh-Des Moines Steel Co

Pipe Tools.
Walworth Mfg. Co.

Pitch.
Barrett Co., The.
Carey Co., Philip.

Pitometers.
Pitometer Co., The.

Pito Tubes.
Simplex Valve & Meter Co.

Playground Apparatus.
American Playground Device Co
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg. Co., Fred
Walworth Mfg. Co.

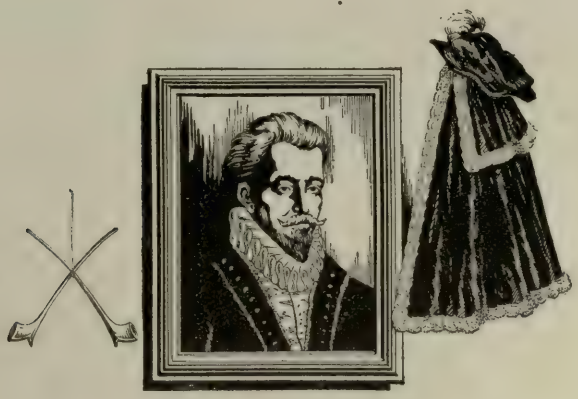
Plows.
Austin Western Road Mach'y Co
Burch Plow Works Co.

Plumbing Supplies.
Clow & Sons, James B.

Poles, Combination Railway and Lighting.
Cutter Co., George.
Electric Railway Equipment Co.
Union Metal Mfg. Co.

Police Patrols.
The Autocar Co.
General Motors Truck Co.
White Co., The.

Continued on page 110



"And melteth not in the Sun—"

Said Sir Walter Raleigh

referring to the Asphalt Lake on the Island of Trinidad.

He made this remark on the 22nd of March, 1595.

TRINIDAD LAKE ASPHALT

is the same today as it was in 1595.

Its quality never changes and when laid in a pavement it retains indefinitely its nature given tenacity and binding power which accounts for the long life and low maintenance of TRINIDAD PAVEMENTS.

Write for "It is Different".

The Barber Asphalt Paving Company
PHILADELPHIA, PA.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 114

Police Signal Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Police Signal Systems.
Gamewell Fire Alarm Telegraph Co.

Portland Cement.
Pennsylvania Cement Co.

Producers, Gas Power Plant.
Westinghouse Electric & Mfg. Co.

Publishers.
Engineering News-Record.

Pumping Machinery.
Allis-Chalmers Mfg. Co.
Bond Co., Harold L.
Deming Co.
De Laval Steam Turbine Co.
Wood & Co., R. D.
Worthington Pump and Mach. Corp.
Yeomans Bros. Co.

Pumps for Oil and Gasolene.
Bowser & Co., S. F.

Ramshorn Meter Holding Frame.
Ford Meter Box Co.

Repair Lids for Service Boxes.
Clark Co., H. W.

Road and Street Machinery.
Austin-Western Road Machy. Co.
Baker Mfg. Co.
Barber Asphalt Paving Co.
Buffalo-Springfield Roller Co.
Connery & Co., Inc.
Erie Machine Shops.
Four Wheel Drive Auto Co.
Good Roads Machinery Co.
Haiss Wagon Loader Co.
Littleford Bros.
Lyle Corrugated Culvert Co.
Newnort Culvert Co.
Pawling & Harnischfeger Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Union Iron Products Co.
Warren Bros. Co.
White Co., The.
Zieg Mfg. Co., F. B.

Road Binders.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Semet-Solvay Co
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.

Road Culverts.
Burch Plow Works Co.
Clow & Sons, James B.
Good Roads Machy. Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Union Iron Products Co.
U. S. Cast Iron Pipe & Fdry. Co.
Wood & Co., R. D.

Road Drag and Street Scrapers.
Austin-Western Road Machy. Co.
The Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Rochester Can Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Union Iron Products Co.
Zieg Mfg. Co., F. B.

Road Oil.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Dustoline for Roads Co.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.

Road Oilers.
The Autocar Co.
Austin-Western Road Machy. Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Good Roads Machinery Co.
Studebaker.
Universal Road Machinery Co.
White Co., The.

Road Rollers.
Austin-Western Road Machy. Co.
Barber Asphalt Paving Co.
Buffalo Springfield Roller Co.
Erie Machine Shops.
Good Roads Machinery Co.

Rock Crushers.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Worthington Pump & Mach. Corp.

Roofing Materials.
Barber Asphalt Paving Co.
Barrett Co., The.
Carey Co., Philip.

Rubber Tires.—See Tires, Rubber.

Rust Preventing Material.
Barrett Co., The.
Dixon Crucible Co., Jos.

Sand Spreaders.
Buffalo Municipal Equipment Co.

Sand Testing Machines.
Kolesch & Co.

Sanitary Drinking Fountains.
Clow & Sons, James B.
Imperial Brass Mfg. Co.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Scarifiers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.

Seeds, Plants and Bulbs.
Burpee Co., W. Atlee.
Dreer, Henry A.
Storrs & Harrison Co.
Thorburn & Co., J. M.

Service Boxes.
Clark Co., H. W.
Clow & Sons, James B.

Service Box Finders.
Clark Co., H. W.

Sewage Disinfection.
Electro Bleaching Gas Co.

Sewage Pumps and Ejectors.
Otterson Auto-Eductor Co.
Pacific Flush Tank Co.
Yeomans Bros. Co.

Sewer Buckets.
Champion Potato Machinery Co.

Sewer Castings.
Clark Co., H. W.
Clow & Sons, James B.
Dee Co., Wm. E.
Enterprise Iron Works.
Pacific Flush Tank Co.

Sewer Cleaning Apparatus.
Buffalo Municipal Equipment Co.
Champion Potato Machinery Co.
Pacific Flush Tank Co.
Turbine Sewer Machine Co.

Sewer Pipe.
Dee Co., Wm. E.
Pacific Tank & Pipe Co.

Sewer Rods.
Bond Co., Harold L.
Champion Potato Machinery Co.
Turbine Sewer Machine Co.

Sheer Gates.
Chapman Valve Mfg. Co.
Columbian Iron Works.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Shower Baths.
Imperial Brass Mfg. Co.

Signs—Iron and Wire.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Stewart Iron Works Co.
Union Iron Products Co.

Sleeves and Valves.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Sluice Gates and Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Rensselaer Valve Co.
Walworth Mfg. Co.

Smoke Stacks.
Pittsburgh-Des Moines Steel Co

Snow Cleaning Machinery.
Baker Mfg. Co.
Good Roads Machinery Co.
Newport Culvert Co.
Russell Grader Mfg. Co.
Zieg Mfg. Co., F. B.

Soil Pipe (Cast Iron).
Abendroth Bros.
Alabama Pipe & Foundry Co
American Enameling Mfg. Co.
American Foundry & Pipe Co.
Anniston Foundry Co.
Bessemer Soil Pipe Co.
Campbell Mfg. Co.
Central Foundry Co.
Charlotte Pipe and Foundry Cor
Clow & Sons, James B.
Coosa Pipe & Foundry Co.
Crown Pipe and Foundry Co.
Gadsden Pipe Co.
Haines, Jones & Cadbury Co.
Johnson Co., J. D.
Krupp Foundry Co.
Medina Foundry Co.
National Pipe & Fdry. Co.
Reading Foundry & Supply Co
Salem Brass & Iron Mfg. Co.
Sanitary Co. of America.
Somerville Iron Works, The
Standard Foundry Co.
Superior Mfg. Co.
Union Foundry Co.
Weiskittel & Son Co., A.
Wetter Mfg. Co., H.

Spraying Machinery for Trees a Shrubs.
Deming Co.

Spray Nozzles.
Spray Engineering Co.

Standpipes.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pacific Tank and Pipe Co.
Pittsburgh-Des Moines Steel Co
Wood & Co., R. D.

Steel Form for Drainage Tile.
Northwestern Steel & Iron Work

Steel Plate Work.
Pittsburgh-Des Moines Steel Co

Stone Spreaders.
Austin Western Road Mach'y C
Burch Plow Works Co.

Street Cleaners Carts.
Studebaker.

Street Cleaning Machines (Mot Driven).
Elgin Sales Co.

Street Flushers.
Buffalo Municipal Equipment C
General Motors Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Lamps—Electric.
Cutter Co., George.
General Electric Co.
Westinghouse Electric & Mfg. C

Continued on page 112

BITOSLAG

REG. U.S. PAT. OFFICE

WEARS LIKE IRON

What It Is.

An Improved Asphaltic Concrete Pavement of finely ground slag filler and especially prepared asphalt.



Lincoln Highway, Coatesville, Pa.

How Made.

In regular asphalt paving plants. Hauled to scene of work where it is deposited, spread and rolled.

WHAT IT DOES.

BITOSLAG presents a paving surface that is sightly; pleasant to ride over; comparatively non-slippery and non-skidding; when properly laid will not shove, push or creep under traffic; is unaffected by the extremes of heat or of cold. In short, it approaches the ideal or perfect pavement more closely than any which has heretofore been offered on the market.

All highway officials, street superintendents and tax payers should become well acquainted with BITOSLAG and demand it for city and county pavements.

For illustrated printed matter and further information send your address to

BITOSLAG PAVING Co

90 West Street - New York City

Every name in this list is represented by an advertisement in this issue of THE AMERICA CITY. The alphabetical index to all advertisers follows this classified list. See page 11

Street Lamp Posts.
Chicago Concrete Post Co.
Clow & Sons, James B.
Cutter Co., George.
Electric Railway Equipment Co.
Flour City Ornamental Iron Co.
Lyle Corrugated Culvert Co.
Stewart Iron Works Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Street and Road Graders.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Russell Grader Mfg. Co.
Spaulding Mfg. Co.
Union Iron Products Co.
Zieg Mfg. Co., F. B.

Street and Road Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Union Iron Products Co.

Street Sign Posts.
Cutter Co., George.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Street Sprinklers.
Austin-Western Road Machy. Co.
Autocar Co., The
Buffalo Municipal Equipment Co.
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Sweepers.
Austin-Western Road Machy. Co.
Elgin Sales Co.
Studebaker.
Universal Road Machinery Co.

Street Trash Cans.
American Can Co.
Rochester Can Co.
Safety Sanitary Rubbish Box Co.
Steel Basket Co.

Surveyors Instruments.
Buff & Buff Co.
Kolesch & Co.

Tanglefoot for Trees.
Thum Co., O. & W.

Tanks, Storage for Oils and Gasoline, etc.
Atlantic Refining Co.
Bowser & Co., Inc., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pacific Tank & Pipe Co.
Pittsburgh-Des Moines Steel Co.

Tanks and Towers.
Chicago Bridge and Iron Works.
Newport Culvert Co.
Pacific Tank & Pipe Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A.

Tapping Machines.
Smith Co., A. P.

Tar.
Barrett Co., The.

Tar & Asphalt Spreaders.
Four Wheel Drive Auto Co.
White Co., The.

Tar Kettles.
Barber Asphalt Paving Co.
Good Roads Machinery Co.
Connery & Co., Inc.
Littleford Bros.
Warren Bros. Co.

Tarvia.
Barrett Co., The.

Testing Laboratories.
Allentown Testing Laboratory Co.

Tires, Rubber.
Dayton Rubber Mfg. Co.
Firestone Tire & Rubber Co.
Goodrich Rubber Co., B. F.
U. S. Tire Co.

Traction Engines.
Buffalo Springfield Roller Co.

Traction Trains.
Buffalo Springfield Roller Co.

Tractors.
American-La France Fire Engine Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Watson Wagon Co.
White Co., The.

Traffic Posts.
Buffalo Municipal Equipment Co.
Chicago Concrete Post Co.
Cutter Co., George.
Flour City Ornamental Iron Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Traffic Regulation Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.

Trailers.
Buffalo Springfield Roller Co.
Eagle Wagon Works
Glen Wagon & Car Corp.
Watson Wagon Co.

Trench Braces.
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Valve Seats.
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Valve Specialties
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Walworth Mfg. Co.

Wagons and Carts.
Studebaker.
Watson Wagon Co.

Wagon Loaders.
Haiss Wagon Loader Co.

Water Supply Conservation.
National Water Main Cleanin
Pitometer Co.

Water Main Cleaning.
National Water Main Cleanin

Water Meters.
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Buffalo Meter Co.
General Electric Co.
Hersey Mfg. Co.
Neptune Meter Co.
Pittsburgh Meter Co.
Simplex Valve & Meter Co.
Thomson Meter Co.
Union Water Meter Co.
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Leadite Co.
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Minwax Co.
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United Lead Co.
Warren Fdry. & Machine Co.

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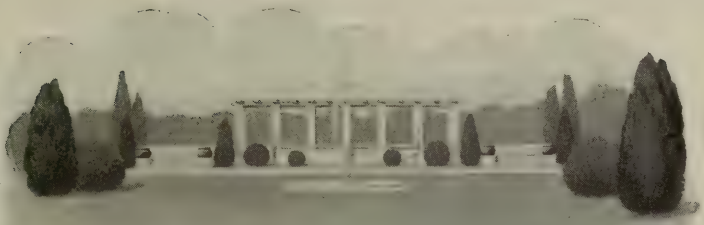
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Republic Creosoting Co.

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Quality

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GRANTED that the forty-two years' reputation of "PENNSYLVANIA" *Quality* Lawn Mowers may prejudice you in their favor—doesn't the constant appearance of these mowers in the hands of caretakers and expert gardeners of big estates, public parks and the like, present an unanswerable argument in favor of their high efficiency?

Sold by Hardware Dealers and Seedsmen

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INCORPORATED
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This trade mark is on the handles of:

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"ed Cloud B. B."
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"Daisy"
"New Belmont"
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"Panama"
"Delta B. B."
"Electra"
"Pennsylvania Pony"
"Pennsylvania Horse"
"Pennsylvania Grand Horse"
"Pennsylvania Trio Horse" (86 in. cut)



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Traffic Guides



Many troublesome problems can be straightened out just as quickly as the right solution is found.

The most satisfactory solution for your traffic problems is found in the Cutter Traffic Post.

On the darkest night and thru rain or snow shines out the red globe to command instant attention and enforce the Safety First rule of Keep to the Right.

In addition to the most satisfactory styles of traffic posts, we also manufacture the largest and most varied assortment of attractive designs of street lighting poles.

The illustrated catalog which we publish showing our complete line of fixtures will be sent on receipt of your address.

GEORGE CUTTER CO.
413 Notre Dame Street
South Bend, Ind.

The Ideal Dust Preventive

DUSTOLINE
FOR ROADS

(TRADE MARK)

Odorless

Stainless

Trackless

Transparent

The Dustoline for Roads Co

Summit · N. J.

Phone 33

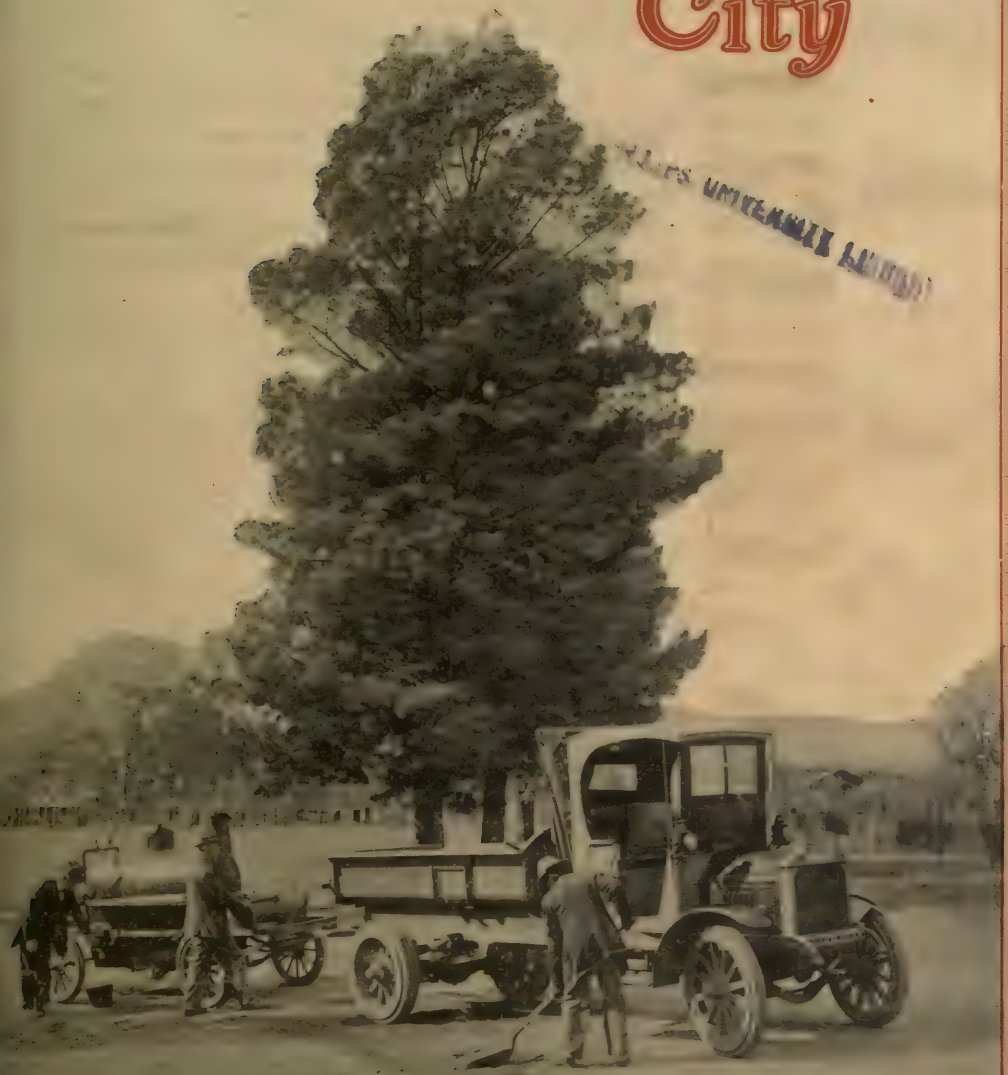
Has none of the objectional features of the black asphaltic oils or tar preparations

ÖWN AND COUNTY EDITION

May, 1919

35 Cents $3 a Year

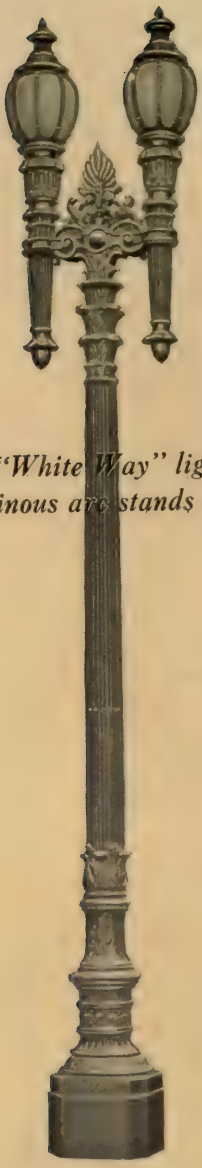
The American City



Do not wait for pre-war prices before going ahead with your street and road-work. Pre-war prices will not come back except in a few isolated instances where labor is but a small factor in production. Any attempt to wait for pre-war prices is likely to result in serious unemployment problems.

On the other hand, the vigorous prosecution of all needed municipal and county improvements will provide plenty of work for all needing employment, as well as increased industrial activity in factory and warehouse.

See "STANDARD SIGNS FOR ALL HIGHWAYS" Page 417



For "White Way" lighting the luminous arc stands supreme

And San Francisco, too, comes back for more

San Francisco, whose "Path of Gold" flooded light from G-E Luminous Arcs has been talke from coast to coast—has extended its famous Ma Street lighting using the same G-E units as selected for the original Path of Gold.

For "White Way" lighting the luminous arc st supreme—but let San Francisco herself tell the s

"THE RECENT completion of the triangle district l system gives San Francisco the right to claim the dist of being the best illuminated city in the world.

"In the achievement through which the territory b by Powell, Bush and Market streets is kept ablaze un splendid electric globes, the Downtown Association improvement equal to the Path of Gold, which makes l street one of the most noted of the world's business tho fares.

"In the selection of the lights for the Path of Gold a triangle district, applied science cut a large figure, w result that the glare that oppresses the eye and acut fects the v sion in other places is absent. While ab light is provided, the ı ltra violet and brilliant red, rays, are absent. The lamps are amber by day, yet th at night is of soft white, closely allied to daylight—a both unique and beautiful.

* * * *

"San Francisco gathered fame through the Path of Go will acquire additional advertising as a result of this innovation. The promoters*****are entitled to com tion for having added to the many attractions of the m lis a feature that is at once a distinction and a delight."

From the San Francisco "Bulletin," January 8

No city is too great—no town too small—to enjo attractiveness, safety and business-building effe well lighted streets. G-E Luminous Arc lighti particularly suited to "White Way" and general l ness district lighting.

Consult our street lighting specialists.

General Electric Company

General Office Schenectady, N.Y.

Vol. XX THE AMERICAN CITY, May, 1919
Entered as second-class matter, September 1, 1914, at the Post Office at New York, N. Y., under Act of March 3,
Issued Monthly Price 35 Cents: $3 a Year The Civic Press, Tribune Bldg., New

CAST IRON PIPE

2-in. to 84-in. diameter

ALL TYPES:
Bell and Spigot, Flange, Flexible Joint, Plain End and Threaded,

FOR:
Water, Gas, Sewers, Oil, Culverts, High Pressure Fire Service, Power & Industrial Plant Piping.

FITTINGS: STANDARD OR SPECIAL—LARGE CYLINDERS—RINGS UP TO 16 FT. DIAMETER

HEAVY CASTINGS

in the rough or machined to Engineers' designs

IRON CASTINGS, 1 lb. to 50 tons

Hydraulic cylinders, presses, accumulators,
Castings for Machine Tool Builders
Semi-Steel Castings

"USICAST" Chemical Castings, Sugar House Work, etc.

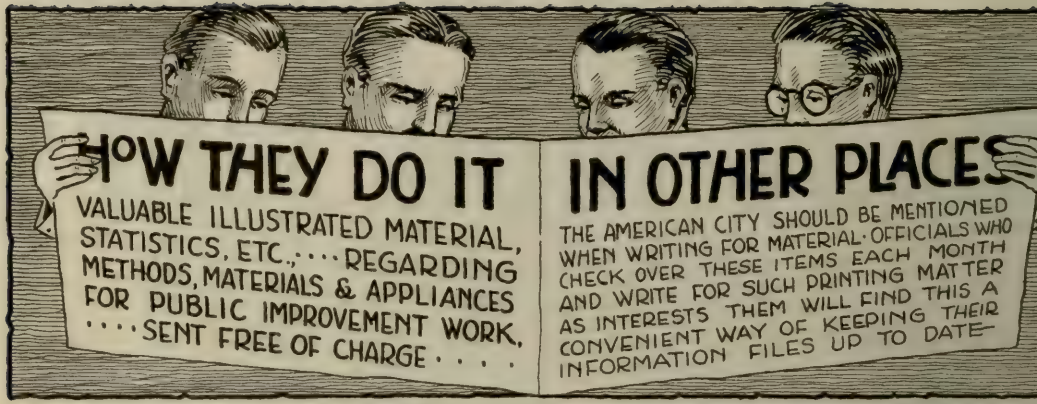
Send inquiry to nearest Sales Office,
Apply Publicity Department, Burlington, N. J., for literature on Pipe or Castings

UNITED STATES CAST IRON PIPE AND FOUNDRY CO.

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New York, 71 Broadway.
Birmingham, Ala., American Trust Bldg.
Buffalo, 957 E. Ferry St.
Cleveland, 1150 E. 26th St.
Minneapolis, Plymouth Building



How to Build Concrete Houses.

Issue No. 15 of *Alpha Aids* contains a description of poured wall concrete houses, precast beam and slab concrete houses and gunite-and-frame houses. This issue can be secured from the Alpha Portland Cement Company, Easton, Pa., by mentioning THE AMERICAN CITY.

Change Clusters to Single Lamps.

A very interesting series of pamphlets dealing with the savings effected thru changing the old-style cluster post to single-light posts and the particular advantage of Cutter's standards has just been published by the George Cutter Company, South Bend, Ind. In addition to this, the company has issued its new price catalog for the benefit of those interested in purchasing economical street lighting standards.

Tarvia Road Book.

The Barrett Company, 17 Battery Place, New York City, has recently published a most excellent pocket-sized reference book for highway engineers and road builders, covering all the specific data necessary to highway engineers in using various materials for surface treatment. Such tables as the quantity of material per mile, the distance covered by various tank capacities and the material per square yard per rate of application are among the many valuable tables included in this book. Readers mentioning THE AMERICAN CITY can secure a copy of this book for their personal use.

Kerosene Burners and Furnace for Municipal Repairs.

Kerosene burners for use in melting lead, heating iron pipes for bending, thawing frozen ground, heating asphalt pavement and kettles and for many other services in municipal work are described in bulletin 58A published by the Hauck Manufacturing Company, 140 Livingston Street, Brooklyn, N. Y.

A Pressure Distributor for Building Bituminous Highways.

The Fricker Manifold, which gained such prominence for many years in the construction of good roads has been taken over by the Q. E. D. Pressure Distributor Company, 18400 Sloane Ave., Lakewood, Ohio. An interesting catalog describes the action of this multiple tar and asphalt gun.

Something New in Wagon Loaders.

A wagon loader that is self-propelled and self-feeding, and digs a path for its own wheels, is fully described in Booklet No. 219, issued by the George Haiss Manufacturing Company, 143d St. and Rider Ave., New York City. It is claimed that this machine will revolutionize truck-loading methods and, with one man at the levers, can load five tons of material in five minutes without any hand shoveling.

Triple Combination Motor Fire Trucks.

A very interesting descriptive catalog showing the White triple combination pumping engine, chemical engine and hose car has just been issued by the White Company, Cleveland, Ohio. It contains a detailed description of this type of fire apparatus, with specifications and records of performances, and forms a valuable piece of literature for all interested in fire apparatus.

Keep Your Road from Raveling.

Bituminous, block or brick roadways which are not protected at the edge by curbs need something to prevent the disintegration of the pavement at the shoulder. The International Steel Tie Company, 16702 Waterloo Ro Cleveland, Ohio, fully describes roadway paving gua in its literature, which will be sent to those mention THE AMERICAN CITY.

Dump Wagons for Ashes and Garbage.

The Watson Wagon Company, 30 Center St., Canast N. Y., manufactures special types of dumping wag designed for sanitary and economical haulage of all s of city waste. The Watson Company also makes a c plete line of dump wagon, motor truck and trailer eq ment suitable for the hauling of paving and road-build materials, and illustrated catalogs will be mailed on quest.

Valves and Hydrants.

Municipal and water-works officials concerned in secur efficient water systems will appreciate the catalog wh has been issued by the Flower Valve Manufacturing C pany, 103 Parkinson Street, Detroit, Mich. In this b let are described and illustrated a complete line of hydrants and valves constructed to meet the demands hard and constant service with a maximum of wear efficiency.

All-Steel Playground Apparatus.

Are the playgrounds in your town properly supplied v safe apparatus that will bring health and happiness to children this summer? Howard George, Philadelphia, has prepared a large catalog of the Apex improved steel playground equipment. The catalog contains s interesting photographs of boys and girls using this paratus, a considerable number of drawings of var models, and suggested lists of equipment for both l and small playgrounds.

Honor Rolls for War Memorials.

Every municipality, every local organization and ev business house which wishes to properly record its heroes should write for sketches, catalogs and prices the Imperial Brass Manufacturing Company, 1209 W Harrison Street, Chicago, Ill., whose products have tracted wide attention.

Dependable Dump Wagons and Trailers.

An interesting catalog has recently been published by Eagle Wagon Works, Auburn, N. Y., giving a careful scription of their well-built dump wagons and trail Their dump wagons are built in 1½- and 3-yard capaci and the two-wheel trailers for use with tractors or trucks prove most satisfactory. Catalogs will be sent to those mentioning THE AMERICAN CITY.

Easy Running Lawn Mowers.

A catalog has been issued by the Pennsylvania L Mower Works, Philadelphia, Pa., which covers a comp line of ball-bearing lawn mowers, lawn trimmers under-cut trimmers, as well as horse-drawn mowing chines and grass catchers.

Literature on Road Machinery.

A series of interesting bulletins suitable for binding h just been issued by the Good Roads Machinery Comp on heating kettles for heavy asphalt and tar produ road drags, Monarch Pressure Distributors for the a cation of oil and tar products to roads, and other road chinery. These may be secured from the Good R Machinery Company, Kennett Square, Pa.

Prices of Lamp Standards.

The Union Metal Manufacturing Company, Canton, O issues a catalog and price list covering all of its m lamp standards. This volume contains dimensions, spe cations and full descriptions of all kinds of modern l standards.

(Continued on page 6)



utocar Pulls Itself Through ut No Community Wants Such Roads

WHEN a good, hard, permanent road replaces this stretch of mire, every foot of land adjoining it will increase in value, and every pound hauled over it will decrease in cost. This photograph was not posed for advertising—it shows the actual condition of a seventeen-mile link of so-called road between Pittsburgh and Butler, Pa.

Use your influence for good roads at every opportunity. Good roads are one of the greatest agencies in advancing the economic and social life of the nation.

The Highway Industries Association, 1311 G Street, N. W., Washington, D. C., has done so much towards forwarding good roads that we suggest you ask them how they can help you to improve road conditions in your community.

Chassis $2050

THE AUTOCAR COMPANY, *Ardmore, Pa.* Established 1897

The Autocar Sales and Service Company

New York	Boston	Philadelphia	Chicago	Pittsburgh	San Francisco
Brooklyn	Providence	Allentown	St. Louis	Baltimore	San Diego
Bronx	Worcester	Wilmington	Atlantic City	Washington	Sacramento
Newark	New Haven			Los Angeles	Fresno

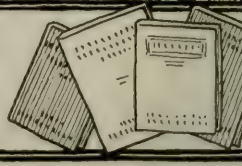
Represented by these Factory Branches, with dealers in other cities

Autocar

HOW THEY DO IT IN OTHER PLACES



Valuable illustrated material as mentioned below, will be sent free of charge if you mention THE AMERICAN CITY



Kerosene Road Rollers.

The Buffalo-Springfield Roller Co., Springfield, Ohio, which maintains the largest factory in the world devoted exclusively to the building of road rollers, is issuing a special catalog illustrating and describing the Buffalo-Springfield kerosene road roller, which is said to embody many of the successful features used on thousands of the company's gasoline and steam rollers, and to be specially designed to withstand the rough usage to which all heavy road-building machinery is subjected.

Wise Cities Drink Safe Water.

A catalog presenting the experiences of various cities which have demonstrated the fact that whenever the disease germs are eliminated from drinking water the result is enormous money profit—to say nothing of the prevention of human suffering and grief—is issued by the Electro Bleaching Gas Company, 18 East Forty-first Street, New York, manufacturers of liquid chlorine for water purification. For information regarding the company's process write also for booklet entitled "Perfect Sterilization."

Trash Cans for City Streets.

In order to keep the waste paper and trash of various kinds off pavements and sidewalks and thus keep their streets in a more attractive shape, many municipalities are installing the improved form of refuse cans illustrated and described in the catalog of The Steel Basket Company, 708 So. Third Street, Cedar Rapids, Iowa.

Street Flushing and Sprinkling.

The Indiana Truck Corporation, Dept. 119, Marion, Ind., will send on request illustrations and descriptive matter of their motor street flushing machines for municipal service; also catalog of their motor trucks for hauling paving and road materials, ashes, garbage, etc.

Protection for Metal Surfaces.

Minwax protective metal coatings are described in a bulletin issued by the Minwax Company, Inc., 18 East Forty-first Street, New York. This coating provides insurance against corrosion of steel structures, tanks, stacks, bridges, boiler fronts and other metal surfaces.

Tubular Poles for Street Lighting.

Elreco tubular steel poles for lighting service in use in many large cities thruout the world, and the Elreco combination poles for joint railway and lighting use are described in the illustrated catalog of the Electric Railway Equipment Company, Cincinnati, Ohio.

Mechanical Graphs and Other Graphic Record Supplies.

Graphic methods of presenting facts are to-day being employed by thousands of busy city officials and business executives, who are finding these methods almost invaluable. The general catalog of graphic record supplies issued by the Educational Exhibition Co., 527 Custom House Street, Providence, R. I., includes brief descriptions and illustrations of maps, swinging-leaf display fixtures, map-marking devices, charting papers, curve cards, drafting materials, etc., also a bibliography of publications on statistical and graphic presentation. A special catalog entitled "Mechanical Graphs" presents some simple mechanical devices for graphically showing facts easily and quickly without the necessity for skilled labor.

"Hi-Way" and Street Signs.

The Granette Products Company, Inc., Second and Center Streets, Des Moines, Iowa, describes its "Hi-Way" signs in two catalogs, each of which contains specifications and illustrations, a description of "Granette," the concrete product used in the manufacture of the signs, and a brief exposition of the manner in which one of these signs is made and how the fast-black inlaid, dovetailed letter becomes a part of the sign.

Money Saved in Municipal Lighting and Water Plants.

Officials interested in reducing the cost of operation municipal lighting and water-works plants will find value the circular issued by S. F. Bowser & Co., Wayne, Ind., illustrating and describing the Bowser filter system and explaining its remarkable economy connection with power-plant operation.

1,264-Page Electrical Supply Catalog.

The Westinghouse Electric & Mfg. Co., of East Pittsbur Pa., has issued a complete catalog of 1,264 pages, in wh all of its electrical supplies are listed. Although the b is called a catalog, it contains also a large amount of formation of a technical and engineering nature, with p tical suggestions for the use of many different kinds apparatus for the transmission and utilization of elec power.

A Police Signaling System.

The "Re-Call," an effective apparatus for locating members of a police department within a few mome thru the use of visual and audible signals, is descri with illustrations, in Bulletin P-18, issued by The Ga well Fire Alarm Telegraph Company, Newton Upper Fa Mass.

Conduits for Street Lighting Systems.

and for all other purposes for which conduits are u are illustrated and described in Booklet D, issued by Fibre Conduit Company, Orangeburg, N. Y.

Hardy Ornamental Nursery Stock for Mun ipal Parks and Roadways.

The Spring 1919 catalog, giving complete list with pri of ornamental trees, shrubs and hardy perennials sold Henry Kohankie & Son, Painesville, Ohio, is now av able for the use of park commissioners and others are now making their preparations for the spring plant of parks, roadways and public or private grounds.

Fire Apparatus for Small Towns.

Peter Pirsch & Co., Kenosha, Wis., has covered the wa of small-town fire departments in its booklet enti "Pirsch Fire Apparatus on Ford Chassis," contain illustrations and specifications of Pirsch combina chemical and hose cars, chemical engines and equipm mounted on Ford chasses, also of hand-drawn lad trucks and hose carts.

Traffic, Warning and Street Name Signs.

Metal traffic, warning and street name signs that clearly lettered and said to be able to stand unlimi abuse are described in a new booklet issued by Buffalo Municipal Equipment Company, Mutual Bldg., Buffalo, N. Y.

What Is "Hy-Rib"?

"Hy-Rib" is a combined unit of steel forms, reinfo ment, lath and channels for concrete, stucco and pla construction in roofs, floors, walls and ceilings, and culverts, conduits, sewers, silos and tanks. A comp catalog of 142 pages, issued by the Truscon Steel C pany, Youngstown, Ohio, gives numerous specificati and instructions for the application of "Hy-Rib," photographs and drawings of building projects of m kinds using this unit.

Graphite Products.

"Dixon's Graphite Products" is the title of a new po catalog issued by the Joseph Dixon Crucible Company, Jersey City, N. J. City and county engineers and oth who have occasion to use lubricants, paints or pencils, obtain this catalog by writing for booklet No. 107- While not so complete as the large general catalog furnishes a good idea of the variety of products made this concern. Pages have been devoted to lists of arti especially for mills, railroads, automobiles, etc.

MICHIGAN
HYDRAULIC SUPPLIES



Patented
September, 1918

The Lead Is Built In the Sleeve

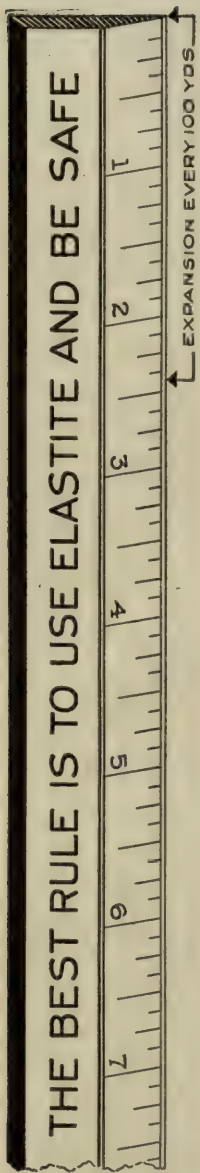
The new Flower Sleeve is a great time and money saver because it does not require so deep a trench, and needs no pouring of lead on the job—simply bolt firmly in place and tap in the usual way with any standard tapping machine. If any caulking is required, it is slight and can be done easily and quickly without any special tools.

On large sizes of sleeves, the saving in lead alone is a considerable item. In all installations, the saving in time and labor is great.

Send for special folder on this sleeve.
It gives prices and full description.

The Flower Valve Manufacturing Company
103 PARKINSON STREET **DETROIT, MICHIGAN**

The rate of expansion due to changes in ter
perature may be small—per inch—but th
result in a hundred yards of roadway is ofte
mighty serious.





THE BEST RULE IS TO USE ELASTITE AND BE SAFE

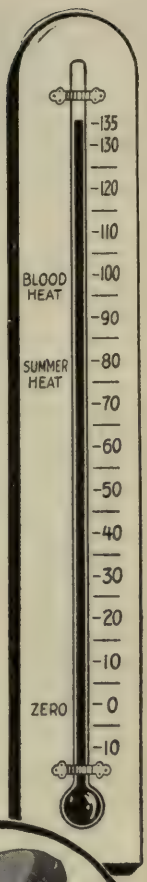
EXPANSION EVERY 100 YDS

5 / 1,000,000

of an inch expansion per degree of temperature for every inch of roadway is a big danger that is overcome with

CAREY Elastite EXPANSION JOINT

NAME REG. U.S. Patent Office

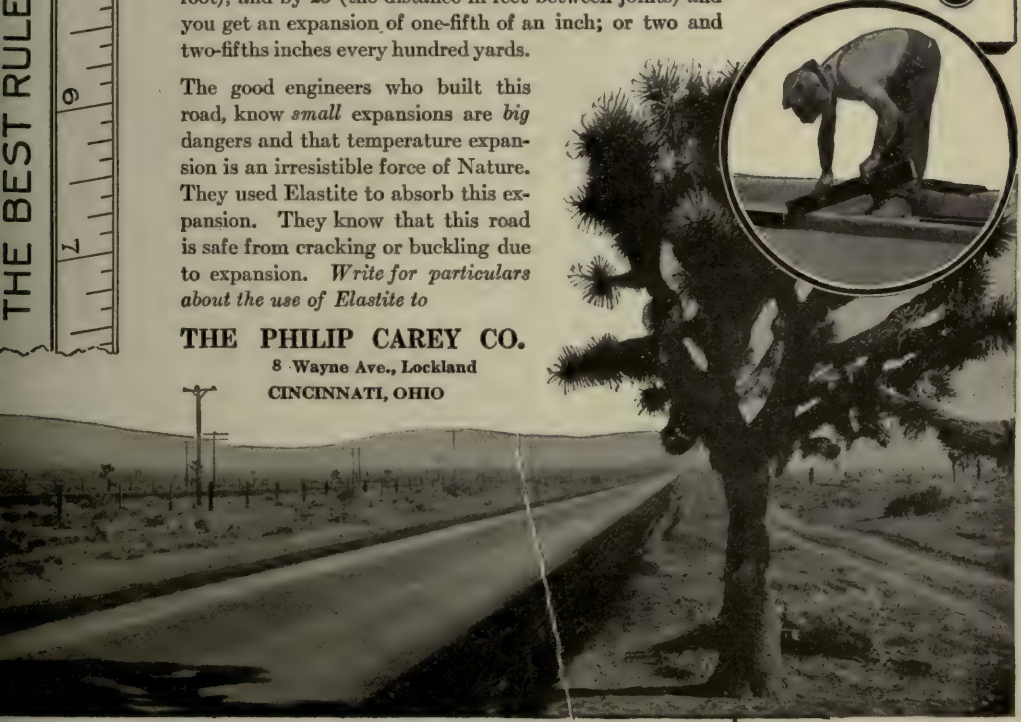


THIS ROAD through the Antelope Valley in Los Angeles County, California, is protected with Elastite Joints one-half an inch thick, every 25 feet. Why?

The temperature goes from as low as zero to 135° above in a year's time. Multiply $\frac{5}{1{,}000{,}000}$ by 135 and the result by 12 (inches in a foot), and by 25 (the distance in feet between joints) and you get an expansion of one-fifth of an inch; or two and two-fifths inches every hundred yards.

The good engineers who built this road, know *small* expansions are *big* dangers and that temperature expansion is an irresistible force of Nature. They used Elastite to absorb this expansion. They know that this road is safe from cracking or buckling due to expansion. *Write for particulars about the use of Elastite to*

THE PHILIP CAREY CO.
8 Wayne Ave., Lockland
CINCINNATI, OHIO





YOU MUST REALIZE

that children will play whether playgrounds are provided or not. But with proper facilities in

A PLAYGROUND LIKE THIS

you can direct the play of boys and girls along the proper lines. They can carry on their games in perfect safety, developing their young bodies gradually until a healthier and sturdier manhood is developed thruout our nation.

If you are interested in developing and building up a better and healthier American Citizenship let us have data on your ground spaces and we will gladly submit plans and prices without your incurring any obligation.

THE EVERWEAR MFG. CO.

SPRINGFIELD OHIO

EVERWEAR
STANDS WEAR AND TEAR

SELECT THE BEST FOR YOUR

Playground Apparatus. Unless playground apparatus is made of high-grade material and by expert mechanics, it may prove costly thru deterioration and accident. Buy the apparatus that has been chosen by the majority of other cities—Everwear Apparatus—and you will never regret your choice.



With EVERWEAR-EQUIPPED

playgrounds the children are safe. If you are interested in keeping the youngsters off the streets and away from danger, equip a playground at once. Send for our large illustrated booklet full of suggestions which you will appreciate.

THE EVERWEAR MFG. CO.

SPRINGFIELD OHIO

EVERWEAR
STANDS WEAR AND TEAR

PLAYGROUND APPARATUS

72,960 TRIDENT METERS USED IN LOS ANGELES



And nearly two million in service to-day, safeguarding the revenues of the thousands of cities where they are installed. The biggest guarantee of the value and the reliability of

THE TRIDENT FAMILY OF METERS

is that, barring fire, earthquakes and accidents, practically every one of the two million meters is still in service. This service extends back to 1892, when the first Trident Meter made its appearance.

UNIVERSAL METERING

of all outlets requires many types of meters. There is a Trident Meter specially adapted to each service condition. For low pressure and small volume such as characterizes residence service, the TRIDENT DISC METER has proved itself the most accurate and most durable. For somewhat larger volumes there is another meter made in sizes ranging from 1½ to 6 inches. For the largest volume there is the TRIDENT CREST METER of the current type that offers a maximum of durability for factory and other large services. THE TRIDENT COMPOUND METER was specially designed and has proved its ability as a revenue producer. "It measures all the water all the time." This is particularly valuable for services where the demand varies greatly.

The largest and most important services are usually fire lines. Here a dual problem is met. The fire meter must measure not only the large flows, but also the small ones. At the same time it must offer no impediment to the high pressure which is needed for fire protection. THE TRIDENT PROTECTUS definitely answers these requirements for all kinds of fire service.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter

LOS ANGELES
IS BUT ONE OF MANY CITIES USING TRIDENT METERS ALMOST EXCLUSIVELY . . .



The list of cities using Trident Meters is a long one. Wherever you find one Trident in service you will usually find the number mounts into the hundreds and thousands, because the satisfaction, dependability and accuracy of Trident Meters wins favor everywhere.

PERFECTION OF MECHANICAL DESIGN

is the first factor of Trident success. The quality of materials consistently maintained continues this success, and the method of manufacture insures a perfect meter.

This perfection of manufacture brings about the possibility of interchangeability, which means that like parts are, as far as possible, interchangeable between old and new models and between different existing models, so that a water-works department may advantageously make Trident equipment its standard and maintain a minimum of stock on hand to take care of any necessary repairs.

WATER WASTE

The only way to minimize leaks and the careless use of water is to meter each and every service thruout the city with the proper type of meter best adapted to that service.

We have a great many interesting booklets dealing with the problems of water waste and their solution which we think will enable your city to secure better and more economical service for your water-works plant. Any or all of these pamphlets for the asking.

NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter





SOME INTERESTIN
CAST IR

The above maps give a graphic idea of the mileage of Cast Iron Pipe in Service in a few prominent cities.

The Cast Iron Pipe in service in New York, Chicago, Philadelphia, Boston, Baltimore and Minneapolis would reach **four times** the distance from **New York City to Rome, Italy.**

The Cast Iron Pipe in Service in New York would reach from **Buffalo to Rio de Janeiro, Brazil.**

The Cast Iron .Pipe in Chicago would reach from **Oklahoma to London, England.**

The Cast Iron Pi
1 Broadw





ILEAGE FIGURES ON
ON PIPE



In Philadelphia—**from San Francisco to Tampa, Florida.**

In Boston—from **New York to Denver.**

In Baltimore—from **Philadelphia to Aberdeen, South Dakota.**

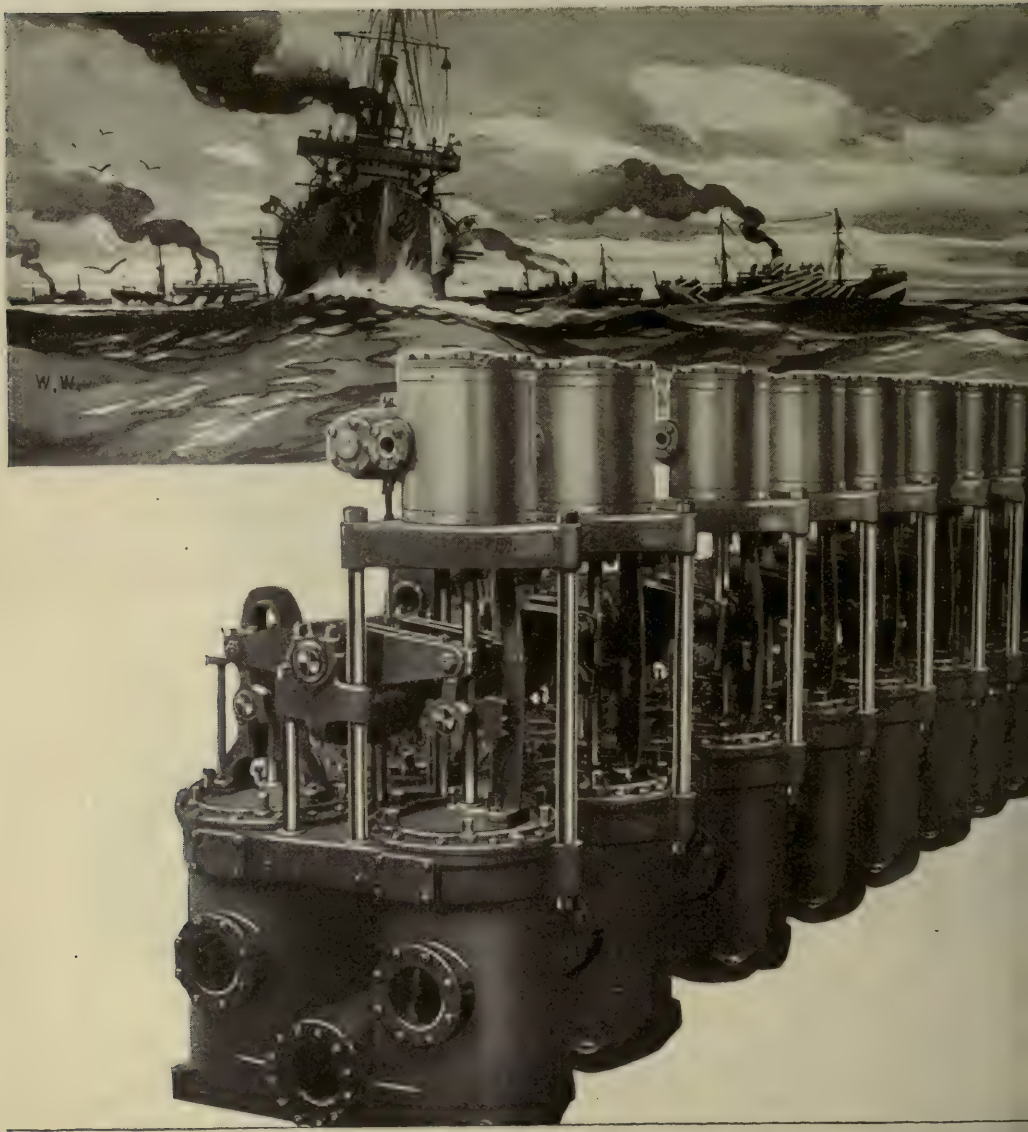
In Minneapolis—from **that city to Atlanta, Ga.**

These examples are drawn from only a small number of cities using Cast Iron Pipe.

Such is the record of Cast Iron Pipe speaking Geographically, but remember while the mileage of Cast Iron Pipe can be measured by man its service can be measured only by centuries.

blicity Bureau
v York



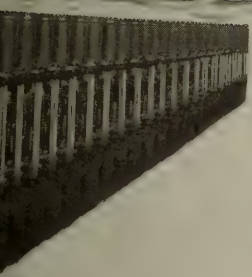


PUMPS—COMPRESSORS—CONDENSERS—METERS

WORTHINGTON

Worthington Works, Harrison, N. J.
Blake & Knowles Works, East Cambridge, Mass.
Deane Works, Holyoke, Mass.
Hazleton Works, Hazleton, Pa.





Worthington Team Work in War-time

IF a destroyer requires say, 26 pumps, and our Government suddenly orders 150 destroyers; and if to this huge program are added battleships, mine-sweepers, and other war-craft, each with full complement of special pumps—how many tools will be left idle, even in the country's largest marine-pump shop? Answer, "Zero."

And if then the Government builds millions of tons of merchant shipping, each ship requiring its boiler-feed pumps, condenser pumps, bilge and general service pumps—to whom can the Government turn? Answer, "Worthington."

For while our Blake & Knowles shop was crowded with war work (ordinarily we make all our marine pumps at Cambridge), we shipped patterns and prints to Holyoke, and our Deane Works stepped into the breach. In normal times Deane specializes on power pumps; but over 300 beam air pumps (illustrated), and hundreds of other marine types, were made at Holyoke for the Emergency Fleet.

The noteworthy point is that our Deane Works turned out these pumps, of a pattern new to them, not merely in good time but actually at a rate and of a quality of workmanship which equalled the old-established standards of our Blake-Knowles Works. It was an exhibition of corporation team-work that adds fresh honors both to Deane and to Worthington.

WORTHINGTON PUMP AND MACHINERY CORPORATION
***Executive Offices:* 115 Broadway, New York City**
Branch Offices in 24 Large Cities

OIL & GAS ENGINES — MINING MACHINERY

TON

PRODUCTS FOR PUBLIC WORKS:

Artesian Well Pumps	Water Works
Condensers	Pumping Engines
Fire Pumps	Water Meters
Oil and Gas Engines	Cement Making Machinery

Special Bulletins on Request

Snow-Holly Works, Buffalo, N.Y.
Laidlaw Works, Cincinnati, Ohio.
Power & Mining Works, Cudahy, Wis.
Gas Engine Works, Cudahy, Wis.

Why Sterilize Water?



This Booklet

will give you the Answer

The A-B-C of Chlorination!

An informing and entirely non-technical discussion of general interest,—but primarily intended for the man who wants plain facts on the value of Liquid Chlorine for sterilizing water supplies and sewage, and

"W&T" APPARATUS

The Standard Chlorinator

Waterworks Engineers and others responsible for the conservation of the public health are invited to send their names for our mailing list.

WALLACE & TIERNAN CO. Inc.

349 BROADWAY NEW YORK



Before—

the heavy rains and floods of spring wash into your water supply the winter's accumulation of waste and polluting material is the time when you should take steps to protect your town or city from *typhoid* and other water-borne epidemics.

LIQUID CHLORINE, the one-hundred per cent. sterilizing agent, controlled by

"W & T" APPARATUS

will make any water supply safe beyond all question—and at a cost of less than fifty cents per million gallons.

We would like to send our booklet "WHY" to anyone interested. It tells the whole story of Water Sterilization by Chlorination.

WALLACE & TIERNAN CO. INC.

349 BROADWAY NEW YORK

550 Peoples Gas Building, Chicago, Ill.

Canadian Representatives
The General Supply Co., of Canada, Ltd.
Ottawa, Montreal, Toronto, Winnipeg, Vancouver

Pacific Coast Representative
Kenneth Shibley, Merchants Exchange Building; San Francisco, Cal.

Southwestern Representative: David Morey, Jr., 507 Scollard Building, Dallas, Texas

Chemicals for Water Purification

We manufacture highest grade of

Sulphate of Alumina

also

Chloride of Lime

Liquid Chlorine

PENNSYLVANIA SALT MFG. CO.

WIDENER BLDG. :: :: PHILADELPHIA, PA.

MATHIESON ALKALI WORKS, Inc.

Niagara Falls, N. Y.

Castner Electrolytic Process

Eagle-Thistle Brand

CHLORIDE OF LIME

In 200, 450 and 750-lb. drums Strongest, quickest-settling, most reliable.

LIQUID CHLORINE

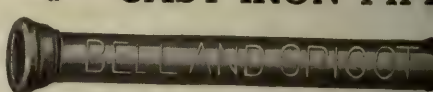
Pure anhydrous, for use with any control apparatus. In improved and convenient cylinders, 105 and 150 lbs. net.

ARNOLD, HOFFMAN & CO., Inc.

Sole Agents

Boston Providence — 61 Broadway New York — Philadelphia Charlotte, N. C.

Manufacturers of **CAST IRON PIPE**



for WATER—GAS—CULVERTS—SEWERS

Special Castings:-Also Flexible Joint Pipe-Cylinders-Tube
Milled and Plain Ends-High Pressure Fire Service Pip



"Quality and Service Guaranteed"

WARREN FOUNDRY & MACHINE CO

Sales Offices { 11 Broadway, N.Y. / 201 Devonshire St., Boston, Mass. } Works: Phillipsburg, N.

B. M. E. SEWER CLEANERS

A remarkable, new, sewer cleaner and root cutter combined.

Guaranteed to remove any deposit, bar none.

Write for facts.

Buffalo Municipal Equipment Co

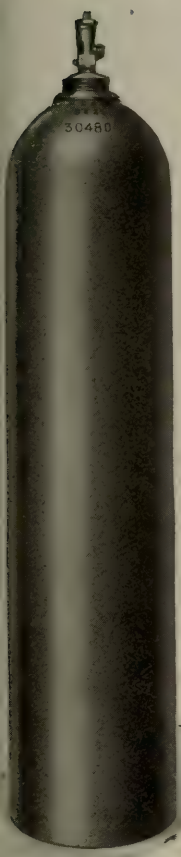
Mutual Life Bldg. Buffalo, N. Y

Quality and Service

are both assured when you buy

Liquid EBG Chlorine

the 100% Sterilizing Agent



Look for the RED Cylinder

Read This!

"We wish to express our satisfaction with the quality of gas which we have had this past year, and also for the service rendered. Under great shipping difficulties we have been able to get our supply regularly and with one exception always had a small reserve.

"This means a great deal to us in water sterilization."

We invite your inquiries and request for Booklet, "The Wise Cities."

ELECTRO BLEACHING GAS COMPANY

Pioneers and Leading Manufacturers of Liquid Chlorine

PLANT: NIAGARA FALLS, N. Y.

Main Office: **18 East 41st Street, New York**

Chicago Office: 11 So. La Salle Street

Canadian Representative: GENERAL SUPPLY CO. OF CANADA, Ltd.

Ottawa Toronto Montreal Winnipeg Vancouver

Paragraph from letter recently received at our New York Office.

Wastage and Leakage Must Be Stopped

THE Cole Pitometer will help. It cuts out all avoidable and unnecessary waste and leaks. It keeps tabs on your water supply and gives an absolutely correct chart record of the amount of water pumped daily. By comparing this amount with the amount consumed you can readily see whether there is a wastage and just how much. The Cole Pitometer also shows whether your pumping machinery is keeping up to the mark.

Bear in mind that by reducing this waste, it is possible to dispense with a considerable amount of pumping, which means less steam, fuel and labor. Don't you think this saving worth while?

The Cole Pitometer is portable, accurate, sensitive and durable, and should be used in every station and on every gravity supply main.

Write for our booklet to-day.

The Pitometer Co.
55 Duane St. New York City

THE X-RAY FOR PUBLIC WATER SYSTEMS
TRADE MARK

GREAT WESTERN ELECTRO CHEM CO.
BUSH, BEACH & GENT
SOLE AGENTS
CARBON TETRACHLORIDE
POTASSIUM CHLORATE
BLEACHING POWDER
LIQUID CHLORINE
CAUSTIC SODA
SAN FRANCISCO, CAL.

A Contract is a Contrac

Liquid Chlorine

Soda Ash

Chloride of Lime

80 Maiden Lane
NEW YORK

Holbrook Building
SAN FRANCISCO

COMPARING

Dirty Water Mains

increase the friction against which water must be pumped and thereby unnecesarily increase the wear on the pumps.

Decreased pump efficiency means bigger coal bills and poor pressure. Good fire service depends on adequate pressure and if the mains are in a dirty condition it is impossible to get good pressure with any kind of economy. Clean water pumped thru dirty mains will become dirty and cause unfavorable comment and trouble in the city.

The moral is that water mains must be clean if they are to be of the greatest value to the city.



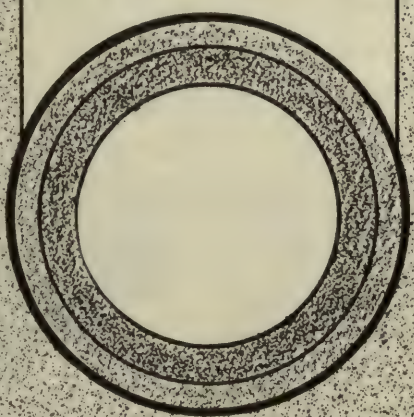
&

Clean Water Mains

offer a smooth inner surface and minimize friction thus reducing wear and tear on the pumps and giving a good clear water at adequate pressure. This pleases the consumer and makes the fire department effective. You can maintain the water mains of your city in good condition by

The National Method

which cleans them quickly and thoroly. After being cleaned they are in as good condition as the day they were laid. The city may save the price of a new pipe line by having the old main cleaned. We will send booklets on request.



National Water Main Cleaning Co.

HUDSON TERMINAL BLDG. NEW YORK CITY

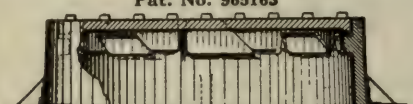
LYNCHBURG FOUNDRY COMPANY

CAST IRON PIPE AND FITTINGS

Bell and Spigot and Flanged

GENERAL SALES OFFICE: Peoples Gas Building, CHICAGO, ILL.

Pat. No. 965163



D. & D. Safety and Noiseless Cover

WM. E. DEE COMPANY

80 N. La Salle Street Chicago, I

We manufacture Manhole, Catch Basin a Sewerage Castings of all Kinds. We make anythi in Gray Iron. Write for our pric

COLUMBIAN IRON WORKS

CHATTANOOGA, TENN.

Manufacturers of Fire Hydrants, Valves, Valve Boxes, Sluice Gate Meter Boxes and Water Works Supplies

ESTIMATES PROMPTLY FURNISHED

SLUICE GATES, CHECK VALVES, AIR VALVES, INDICATOR POSTS, ETC.

GATE VALVES **EDDY** FIRE HYDRANTS

Hydraulically and Electrically Operated Valves and Sluice Gates. Valves Designed For All Kinds of Servi

EDDY VALVE COMPANY, WATERFORD, N. Y.

New York Chicago Boston San Francisco Philadelp

The Best Material for CALKING Joints in Cast Iron Pipes is

Ulco Lead Wool

Write for particulars to

UNITED LEAD COMPANY

111 BROADWAY, N.Y. CITY

Trade **LEADITE** *Ma*

Registered U. S. Patent Office

For Jointing Cast Iron Water Mai

NO CAULKING required

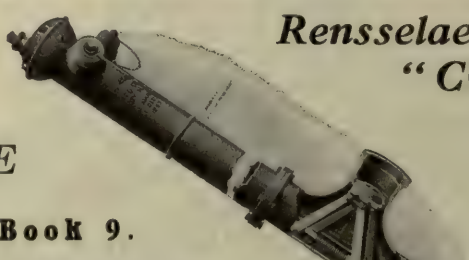
Saves 50% to 65%

Write for information and price

THE LEADITE COMPANY, I

108 S. Broad Street Philadelphia,

They are Reliable When there is a FIRE



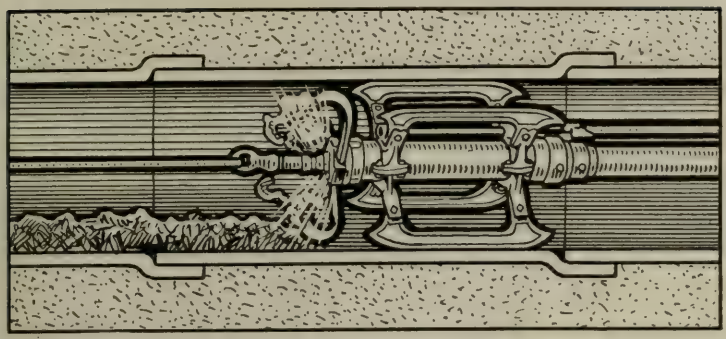
Rensselaer Improved "COREY" Hydrants are BEST

Send for Book 9.

RENSSELAER VALVE CO.

TROY, N. Y.

"COST MOST TO BUILD"



With a Cleverness Which is almost Human

The Turbine Sewer Machine goes along through your sewers cutting out roots and other obstructions and forcing out the accumulations of dirt which are stopping up your sewers and thereby causing just the sort of unhealthful conditions which breed epidemics.

The Conditions of Your Sewers Inside

is a vital question. Some one in your city has got to face the problem—and the sooner the better.

Are any of your sewers partially or wholly clogged with filth? Do you realize what an unhealthy condition this represents? Do you realize that at the present time the health of your citizens is the most essential of all essentials?

Face the matter squarely. You need a Turbine Sewer Cleaner—the only machine which will do the work for you in a thoroughly satisfactory manner.

We do not ask you to take our word for it. Just investigate. Ask the city officials who have used it. Let us show you the letters we have received from them praising its work.

If you need sewer rods, we make them too—and once you place your first order for sewer rods with us you will never want to buy elsewhere.

Satisfactory service is the keynote of our success. Send your address so we can send our big illustrated folder showing how other cities have solved the clogged sewer problem.

Turbine Sewer-Machine Co

7 ELEVENTH ST. MILWAUKEE, WIS.

SMITH FIRE HYDRANTS

designed for service, and durability and adopted by water departments of such cities as New York, St. Louis, Springfield, Washington, Newark as their standard.



The SMITH HYDRANT

is constructed so that all inner parts can be removed in five minutes and replaced in the same length of time, in order to make any necessary repairs, without disturbing the standpipe in the ground; once the hydrant is set.

Ordinary 4″ hydrants will deliver 250 gallons of water per minute at nozzle under average pressure conditions at a frictional loss not greater than 1.7 pounds. The positive acting drip valve prevents water being forced into the ground when main valve is being opened or closed.

Write to-day for valuable descriptive matter of water-works specialties.

Also maker of High Pressure Fire Hydrants, Gate Valves, Brass Goods, Valve Inserting, Machines, Tapping Apparatus, Corporation Tapping Machines and other water-works goods.

The A. P. SMITH MFG. CO., East Orange, N. J.



LUDLOW

GATE VALVE

For Water, Steam, Ga Oil, Hydraulic or Ele tric Operated.

All styles, any size, all pressures.

FIRE HYDRANT

Frost-Proof, Simple-Efficien

All parts removable without digging up hydra Special device prevents street from being floo should stand pipe be broken. Minimum expens install and maintain.

Write today for illustrated catalog of our Valves and Fire Hydrants.

THE LUDLOW VALVE MFG. C
TROY, N. Y.

Branch Offices

New York Chicago Boston
Philadelphia Pittsburg Kansas C

VALVES

P&C CO P&C CO

of Unusual Quality
for Unusual Service

Feed Water Heaters
Hot Water Generators
& Power Pumps
Asbestos Packed
Cocks

Write for Catalogue

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P&C CO

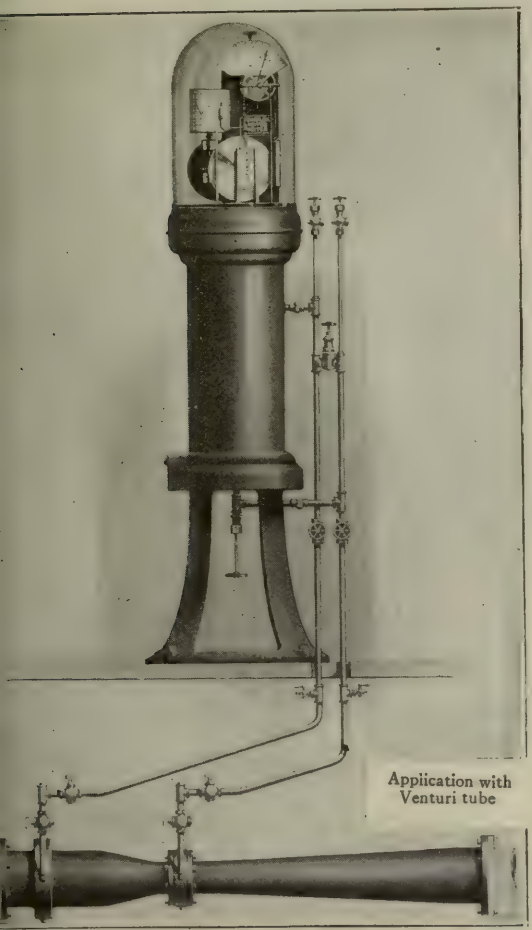
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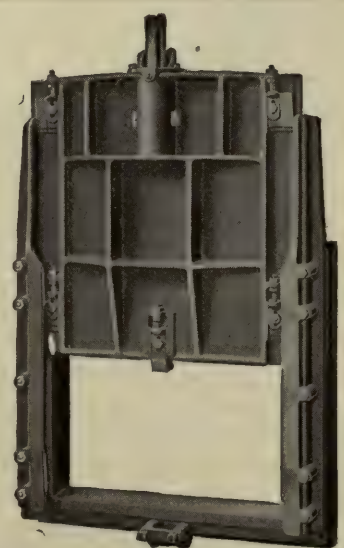
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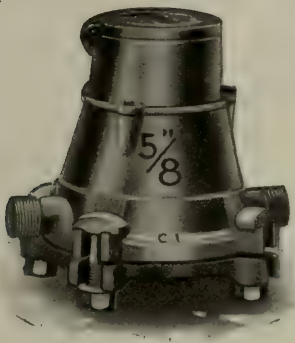
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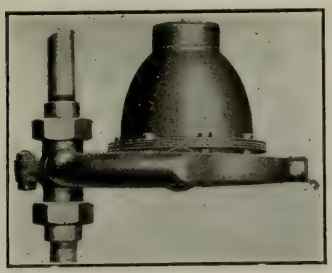
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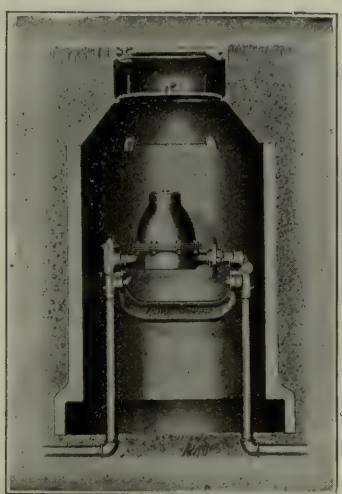
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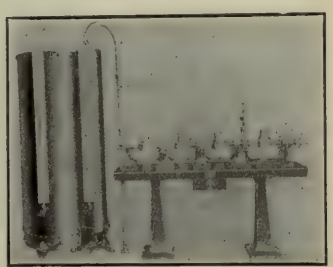
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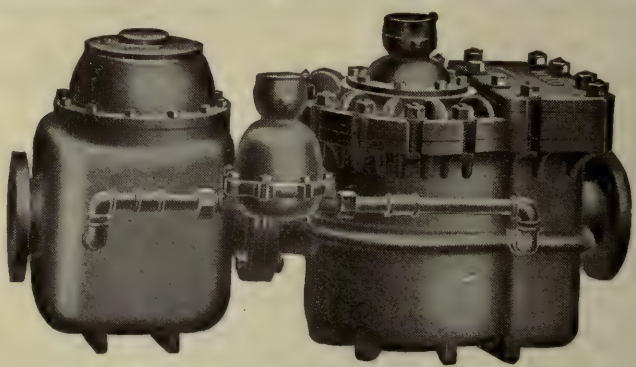
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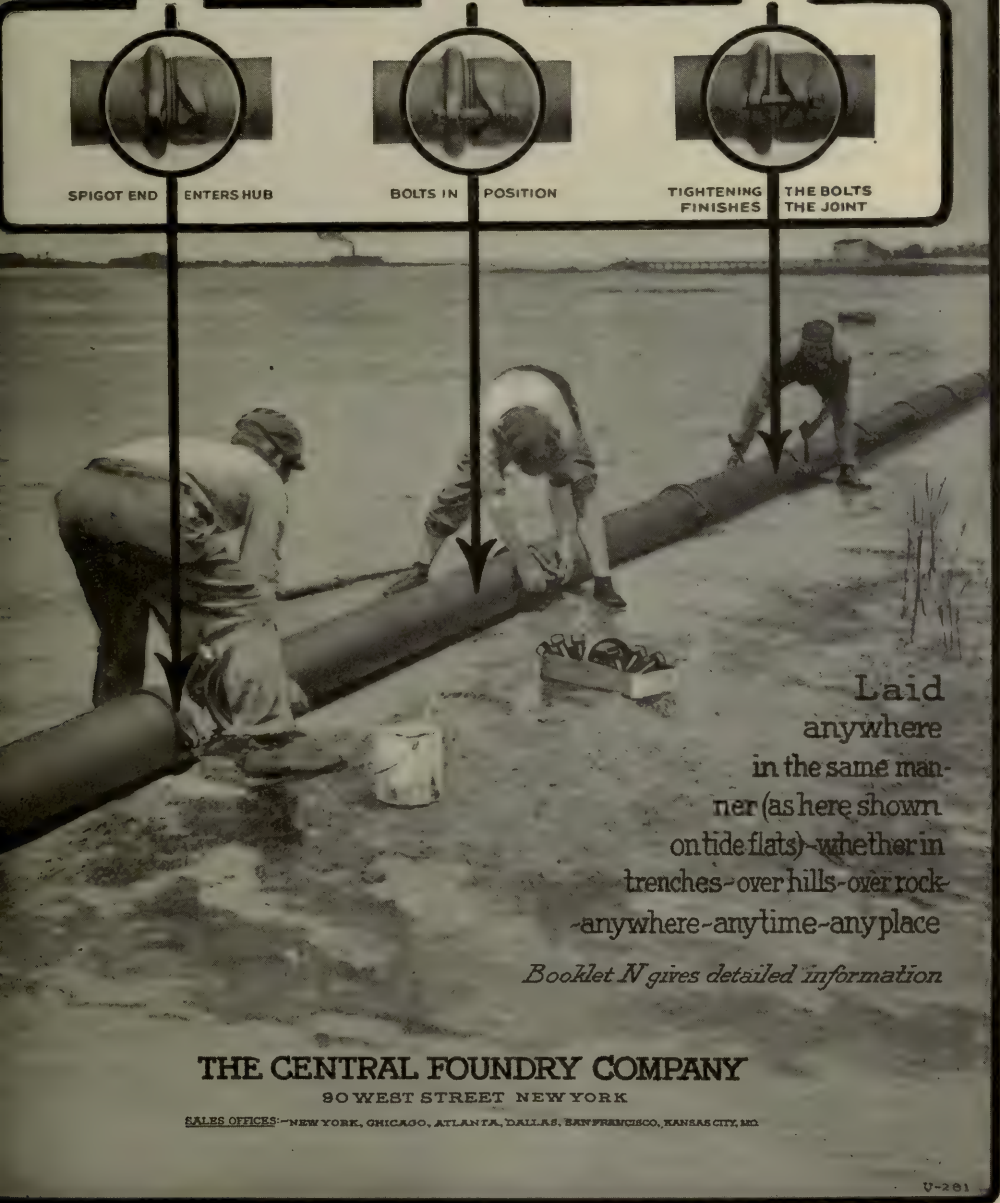
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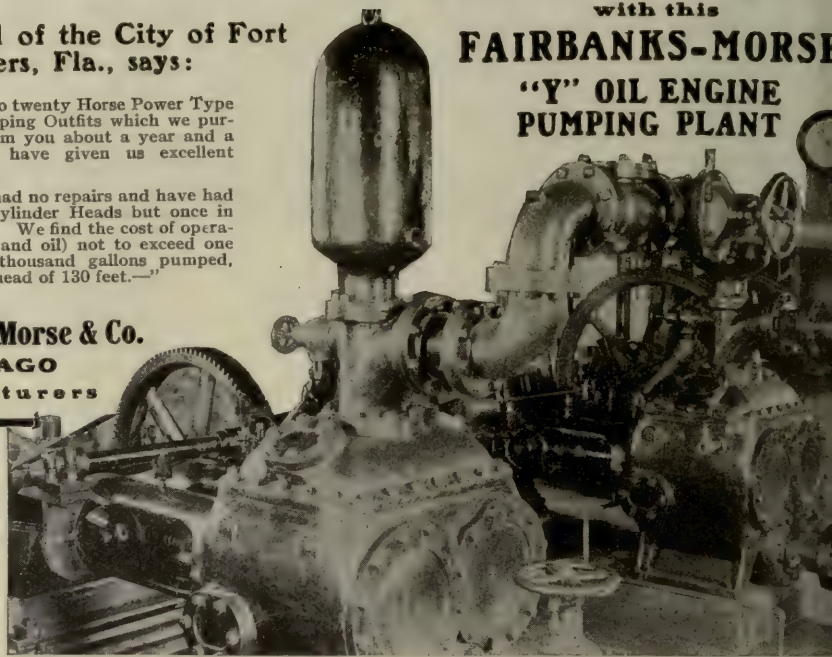
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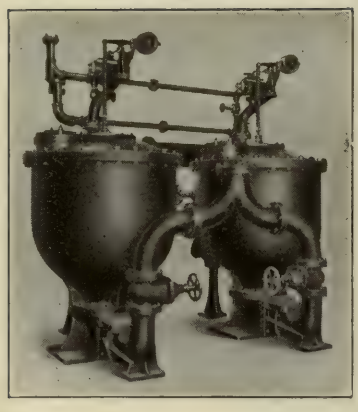


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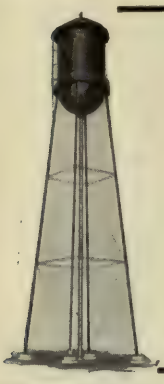


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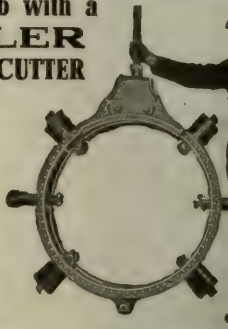
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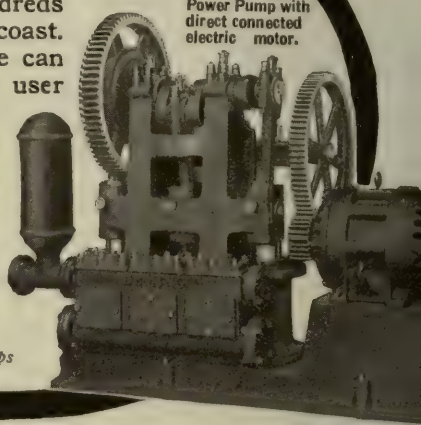
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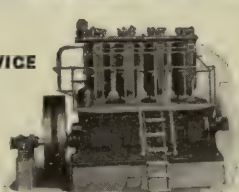
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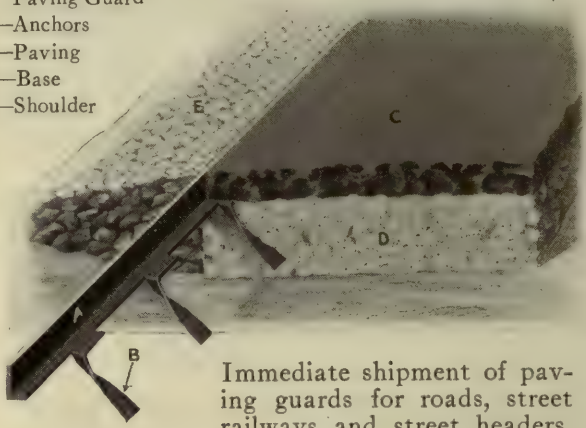
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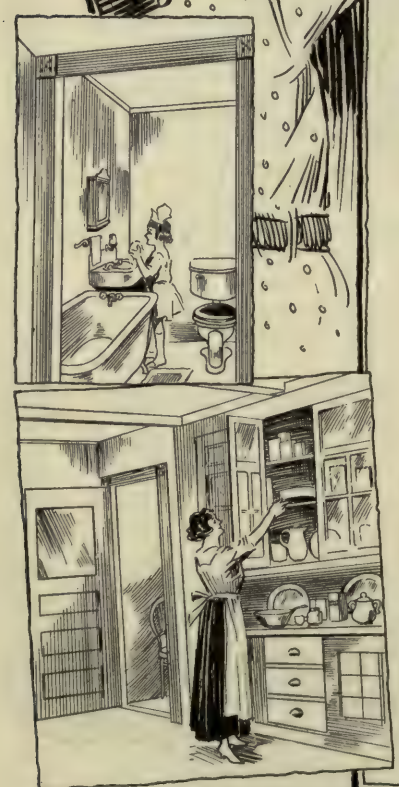
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Issue No. 15 of ALPHA AIDS contains a description of these houses and a number of illustrations and working details. ALPHA AIDS is free on request, as are also the ALPHA Service Sheets on three different types of workingmen's homes: (1) Poured wall concrete houses, Ingersoll type and two other types; (2) Precast beam-and-slab concrete houses; (3) Gunite-and-frame houses.

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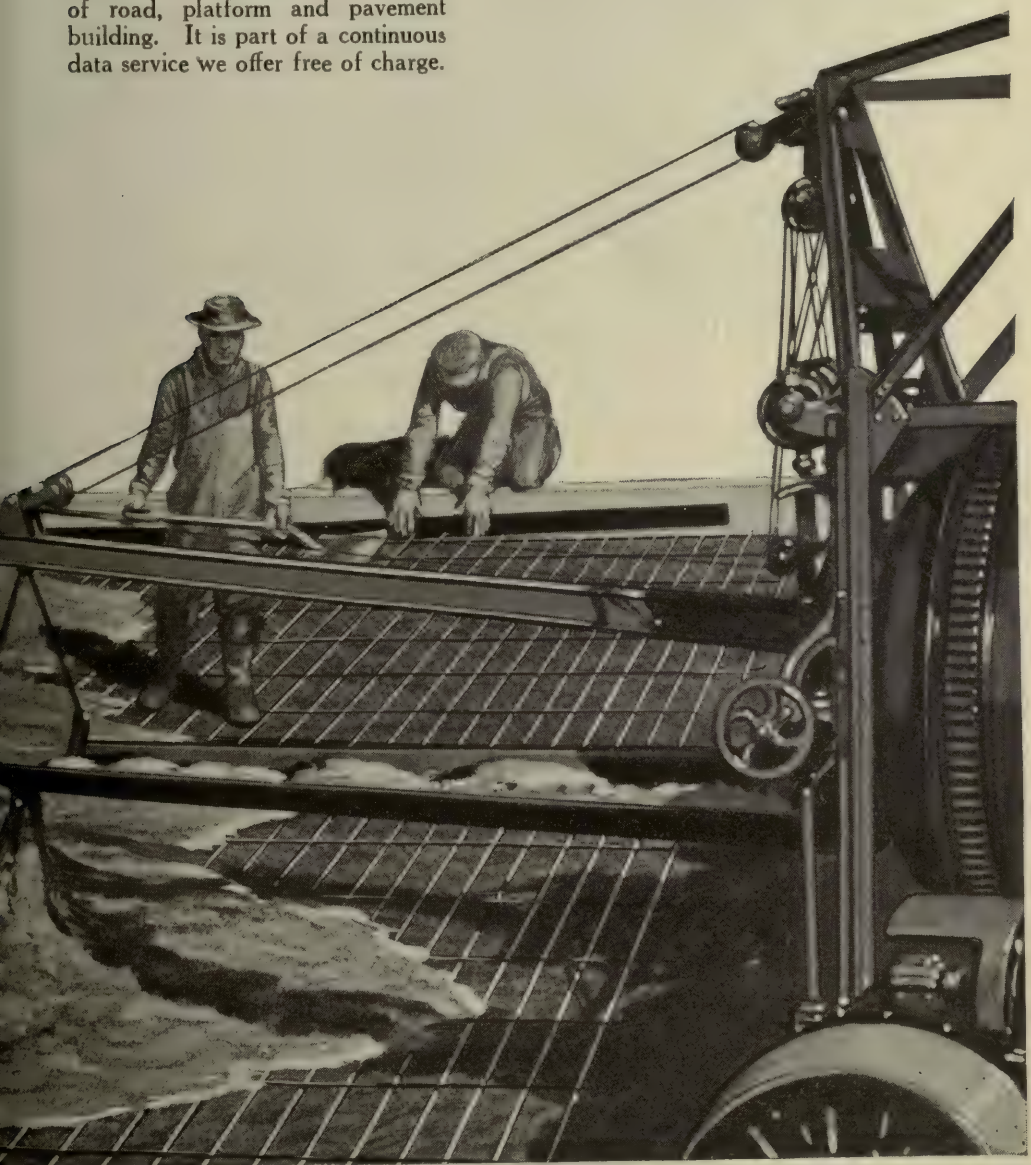
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State of New York, County of New York, ss.:

Before me, a Commissioner of Deeds, in and for the Stat County aforesaid, personally appeared EDGAR J. BUT HEIM, who, having been duly sworn according to law, depos says that he is the Business Manager of THE AMERICAN Cr that the following is, to the best of his knowledge and belief, statement of the ownership, management, etc., of the afo publication for the date shown in the above caption, required Act of August 24, 1912, embodied in Section 443, Postal Law Regulations, printed on the reverse of this form, to wit:

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Editor	HAROLD S. BUTTENHEIM,	"
Managing Editor	HAROLD S. BUTTENHEIM,	"
Business Manager	EDGAR J. BUTTENHEIM,	"

2. That the owners are: (Give names and addresses of indi owners, or, if a corporation, give its name and the name addresses of stockholders owning or hold ng 1 per cent or m the total amount of stock).

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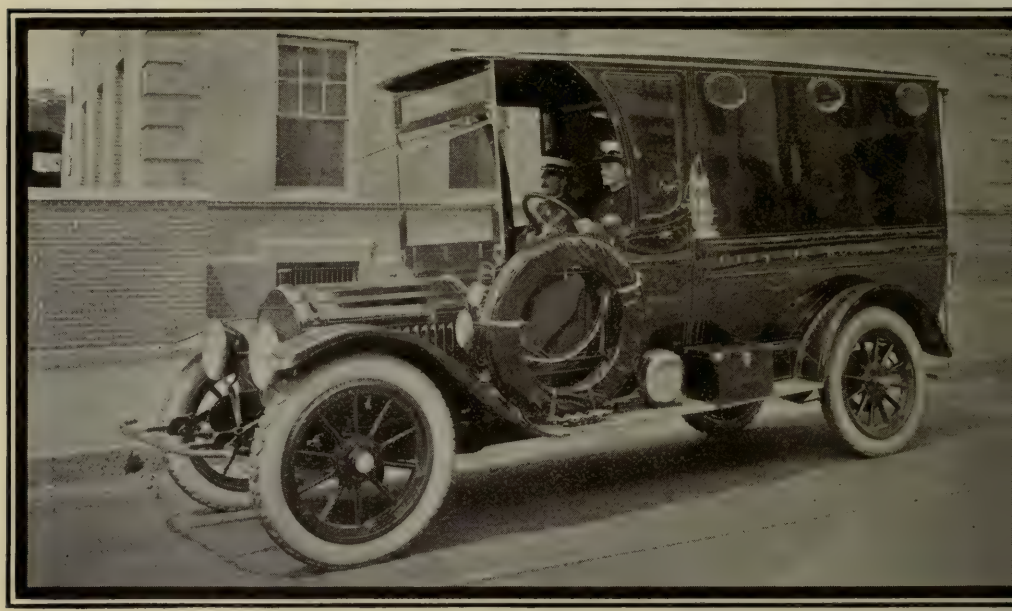
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Two editions of THE AMERICAN CITY are published each month, both containing the same number of pages. The distinction in contents is indicated above. The subscription price of either edition is $3.00. For $1.00 additional per annum, any subscriber may receive both editions; or any subscriber may have his name transferred from the mailing list of the City Edition to that of the Town and County Edition, or vice versa, without extra charge. Canadian subscribers pay 50c extra per year to cover postage; other foreign countries $1 per year extra.

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White Patrols Have The Stamina

THE WHITE COMPANY
CLEVELAND

TOWN & COUNTY EDITION
of
The American City

Tribune Building
New York

MAY, 1919

Volume XX
Number 5

Standard Signs for All Highways

Uniform Signs That Speak Directly, Clearly and Distinctly Are Needed Thruout This Country

OBVIOUSLY, the function of a highway sign, frequently referred to as a traffic sign, is to direct the attention of vehicular traffic to the proximity of various kinds of danger points, or, as is the case with direction signs, to inform traffic as to the main and the secondary routes on which the signs are placed. It logically follows, therefore, that the sign which accomplishes this condition most readily, and in the simplest possible manner, best serves the purposes intended.

With this idea in mind, we approach for constructive criticism the report of the committee on "Uniform Highway Signs" submitted at the 16th Annual Convention of the American Road Builders' Association, in New York City, on February 28 last.

With this report was submitted a series of highway signs, similar to those used in the states of Connecticut and New Jersey. These exhibits, illustrated on page 420, show a series of four signs referring to danger points, and a direction sign, drafted from a sign of like character, adopted by the Automobile Club of Connecticut.

The highway signs submitted were 24 x 36 inches, and the direction sign measures 36 x 36 inches. The word "Danger" on each of the highway signs appears in red, while the other lettering and symbols are black upon a white background. The direction sign has a blue background on which appear white letters referring to the secondary routes, and the white arrow on the blue field with blue letters and figures indicates the main highway route.

This system of highway signs is most generally referred to as the "symbol" system and was originally adopted and first used in England, some twelve years ago. Strange to relate, the English were the first to criticise this, their own system of traffic signs, and in view of this fact they must at least be given credit for sincerity of purpose. Their criticism is directed against lack of simplicity.

The principal objections to this type of highway sign are that the various characters or symbols must first be studied and mentally assimilated, which indicates that there is unnecessary complexity. The mental exertion required to understand the sign partially distracts the driver's attention from his car, altho the sign should be of such character as to be subconsciously comprehended.

The sign is quite unnecessarily large and therefore unreasonably expensive and a detriment to the general appearance of the highway. The color combination is weak and insipid. Further, the lettering and especially the symbols are of such poor proportion as to be discernible only at close range. This very greatly impairs the value of this type of sign and adds to its complexity.

It is readily understood that the average automobile driver handles his machine most skilfully when his attention is devoted only to the driving of the car, and it therefore follows that the less necessary mental exertion on the part of the driver in grasping the meaning of traffic signs, the better.

The direction sign submitted with this committee's report, and illustrated on page 420, is cumbersome and of poor proportions. The arrows are of such type and design as to be hardly intelligible at even a short

REPORT OF COMMITTEE ON "UNIFORM HIGHWAY SIGNS" OF THE AMERICAN ROAD BUILDERS' ASSOCIATION, FEBRUARY 28, 1919

At the annual meeting of this Association a resolution was adopted for the appointment of a committee on uniform highway signs, the need for which was daily more evident by reason of the fast-growing motor traffic of the country.

The writer [R. A. Meeker] was some time later appointed chairman of this committee. It was deemed advisable to have a representative from every state on this board, but upon investigation of the list of members this was found to be impossible, owing to the fact that all of the states were not represented in our membership. The President later named Messrs. J. L. Bauer and T. J. Wasser as additional members of the committee. In the meantime the New Jersey Association of County Engineers had appointed a committee for the same purpose, and the chairman of this committee, Mr. Ross P. McClave, had written to all of the states east of the Mississippi, asking (a) their coöperation; (b) if they had adopted a standard sign; (c) if they would coöperate in establishing a uniform system of highway signs. To these letters no replies were received from six. Five have adopted standards, viz.: Connecticut, Massachusetts, New Jersey, New York and Pennsylvania. Fifteen have adopted no standards; nine signified their willingness to coöperate. From the foregoing it is readily seen that the country is not yet awake to the necessity of uniformity in highway signs. The report of the New Jersey Association of County Engineers summarizes the situation as follows: "It, therefore, shows in the face of these figures that there is a strong possibility that the future will bring a standardization of road signs for at least certain areas of the country.

This view is further taken by the Highway Sign Committee because of the fact that, without the adoption of standards and practically with no restrictions placed as to the character or number of signs posted on highways, the assortment and great number of signs placed on many important intersections is not only confusing but misleading. Of the many signs so placed by private concerns or corporations, that erected by the Standard Oil Company of New Jersey in this state is, without question, the best-designed and most instructive, and it would be unwise and unfair to take from the highways signs of this character which have been of immeasurable value to the users of the highways and which have been erected and maintained by private capital for the purpose of advertising their goods.

The Highway Sign Committee believed, however, that where signs are to be used for advertising purposes they should be considered secondary to those erected by the state, county or other municipality on any of the highways over which it has jurisdiction, and certain restrictions should be placed by the governing body, covering the character of sign and the location thereof, before such sign is erected by a private concern or corporation.

Altho the private direction marker has very little bearing on the adoption of standard signs by the counties of the state, the mention of the Standard Oil sign and other such signs directs attention to the fact that the restrictions on such signs present a problem which must be considered in the adoption of any set of signs.

It further demonstrates the fact that, with the use of the highway becoming more popular, the use of the private direction sign as a means of advertising is becoming a better business proposition, and this class of sign will continue to increase, until the counties or municipalities having control over the highways establish a uniform system of marking, and place proper restrictions on the use of the private sign.

The Highway Sign Committee would, therefore, recommend that, in view of the fact that there appears to be a need and demand of the proper marking of the highways of the counties, the sign of the state of Connecticut as modified be given preference in the adoption of a standard by the counties of the state and that the arrow plan for direction markers be followed with the name of the most important town on the route being shown in a conspicuous place within the arrow and the two intermediate towns placed in a less conspicuous place on the sign. The copy of the sign, which is referred to as the preference of the Association, will be found annexed to this report.

The copy, which is hereto found annexed, is a modification of that published and distributed by the Automobile Club of Connecticut, and the committee has recommended this sign for preference only after careful study of those of the other states and a proper comparison of them with the standard of Connecticut. Your committee further recommends that some action be taken by the Association relative to the adoption by the State Highway Commission of the sign mentioned, so that, whatever final action is taken by the County Engineers' Association, it will have the approval and coöperation of the proper authorities of the state of New Jersey.

The specific recommendations of the New Jersey Engineers' Association are as follows:

First—The direction marker to be 15 inches high and 36 inches wide; the sign to be constructed either of wood or metal; small arrows to be shown in front of the names of the two towns or cities shown above the main arrow; a system of coloring to be adopted showing the main and secondary routes north and south and also secondary routes in these directions; this system of coloring to be made to conform to the coloring system to be adopted by the State Highway Commission with the highways of the State Highway Commission as the main routes, together with the addition of county highways which may form a part of any principal route leading to the objective shown on the sign in the main arrow.

Second—The precautionary sign to have the word "Ahead" eliminated and substituted therein the distance in feet to the impediment which shall, wherever possible, be 500 feet. In the case of the sign denoting curve, an arrow on the left of the curve shall be placed to designate that the curve is turning to the left, and on the right to designate that the curve is turning to the right.

Third—All signs, either direction or precautionary, shall be erected on either concrete or wooden posts. They shall be white and conform in either case to plans annexed hereto.

With the following additions: (a) at the top, "This is .....," giving the name of the town in which the sign is placed; (b) the arrow on the direction sign shall be cobalt blue; (c) the word "Danger," on precautionary signs, shall be vermilion, all other portions to be black or white; (d) these signs to be used only in the open country. The recommendations of the New Jersey Association of County Engineers cover the ground so fully and so well present the present attitude of the several states that your committee would respectfully recommend that a campaign of education be undertaken by the American Road Builders' Association, using this report as a working basis, to the end that the importance of uniform highway signs be fully realized by every commonwealth in the Union, inviting constructive criticism by the highway commissions of the several states.

stance from the sign, and the two refer-
ces made to the secondary route are en-
ely unnecessary and of no practical value.
ie secondary indication is quite enough.

The average automobilist on a main high-
ay is interested principally in knowing the
me of the next large city or town of con-
quence directly on any given route, and
s information should be emphasized on
e sign. The secondary indication should
fer only to the next secondary town.

The highway signs previously referred
are unnecessarily large for the amount
d size of lettering necessary to consti-
e an intelligent warning. The size of
e direction sign advocated in the commit-
e report, while suitable and in good pro-
rtion, can be greatly improved by a re-
rangement, by changing the size of the
tering and the arrow, and by referring
only one secondary route. The arrow,
ich by direction and lettering indicates
e main route, should be placed at the top,
ce all people with whom we are familiar,
th the exception of the Chinese, read
m left to right and from the top down-
rd. This, too, emphasizes the important
rtion of the sign. Again, the elimination
the second reference to an intermediate
nt makes for better and more ready com-
ehension of the entire sign.

The committee in its report also suggested
t these signs should be mounted on poles
posts 12 feet 6 inches above the ground—
irely too high, because it is above the
e of vision of the approaching driver.

Suggested Improvements

Consistent with these well-intentioned
ticisms, we offer for consideration a
ies of traffic signs without characters
l lettered as shown. These signs are only
x 20 inches, yet are visible at a greater
tance than the objectionably large 24 x
inch signs, with the symbols. They have
ed background with white letters. This
nbination makes a better color contrast
l insures visibility at a greater distance
n does a sign with white background
l red and black letters. The word
anger" is properly emphasized in these
signs, and the rounded corners add a dis-
ctive finish.

It is our contention that all danger signs
uld be standardized on one color com-
nation, i. e., red background with white lettering, red being universally recognized as the danger color. Then the vehicle driver will have only one thing to remember: that every red sign on the highway is a warning sign. As he approaches it, the sign supplies the information as to whether the danger point is a steep grade, a sharp curve, a cross-road, a bridge or a railroad crossing.

The erection of such a sign at a distance of 500 feet from the danger point would give ample opportunity for the easy handling and control of the car well in advance.

All highway signs of this character, as well as the direction signs to be used in conjunction with them, should be mounted on the edge of the shoulder of the road, at a height not greater than 7 feet, in line with the normal line of vision of the driver. The traffic signs erected in the state of Maryland by the Automobile Commissioner, at an approximate height of 4 feet, have been very favorably commented upon, because of the ease with which these signs are seen by the motor driver, who is watching the road while driving and whose line of vision is naturally downward from his fixed elevation.

It will be noted that in the series of signs recommended in this article there is an additional sign reading "Danger—Bridge 500 Feet." This sign is not incorporated in the report of the committee. It is, however, necessary, as can readily be appreciated.

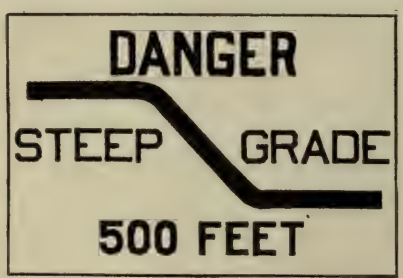
The direction sign recommended has a blue background with white lettering, with the exception of the main route reference, which is to be blue lettering on a white arrow to increase the attention value of this notice. This sign, too, is round-cornered, which makes for better finish and greater attractiveness. Note the improved shape and proportions of the arrow on the sign on page 421. The main route reference is at the top, as it should be.

Where practicable, the direction sign and the highway sign may be mounted on the same post. Their respective color combinations will immediately classify them in the mind of the automobilist. We are of the opinion that all advertising signs, irrespective of their nature, should be by ordinance excluded from the highway proper. They should not be permitted less than 15 feet from the edge of the shoulder of the road.

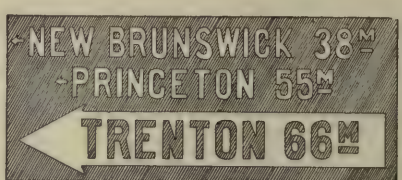
In resumé, the points in favor of the











STANDARD SIGNS SUGGESTED BY A. R. B. A. COMMITTEE

The A. R. B. A. highway signs shown above measure 24 x 36 inches, and the directio sign measures 15 x 36 inches. The word "Danger" on each of the highway signs appears i red, and the other lettering and symbols are black upon a white background.

The direction sign has a blue background, indicated by diagonal cross-hatchings, o which appear white letters referring to the secondary routes, and the white arrow on th blue field with blue letters and figures indicates the main highway route.

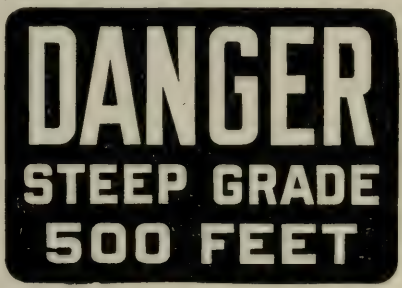
The standard highway signs shown on the opposite page and offered for consideration b THE AMERICAN CITY measure 14 x 20 inches and are to be made with white letters on a re background.

The direction sign measures 15 x 36 inches and has a blue background with white letter ing, with the exception of the main route reference, which is to be blue lettering on a whit arrow.

The direction sign on this page is made proportionate to the highway signs shown, an the direction sign on page 421 is proportionate to the highway signs on that page. It shoul be noted that the dimensions of the two highway signs are identical, even tho the illustration show them of different sizes. This is due to our desire to have each direction sign propor tionate to its own set of warning signs.

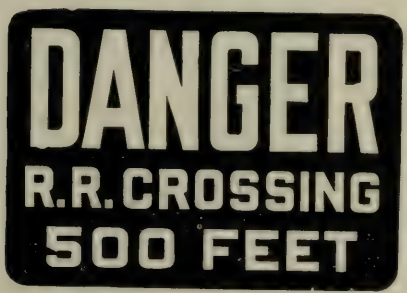
The rounded corners used on the signs on page 421 would not increase the price of th signs, as upon inquiry it has been found that it is practically as easy to shear rounded corner as square corners.













STANDARD SIGNS SUGGESTED BY THE AMERICAN CITY

signs recommended in this article are: reduction in size; increased visibility; and decreased cost, irrespective of the character of the sign. The simplicity of the idea lies in the fact that all red signs will indicate the proximity of danger points.

The mounting of the signs at a 7-foot height increases visibility by placing them directly in the range of vision. The greater uniformity and simpler classification of both the highway signs and the direction signs and the elimination of the necessity of educating, or attempting to educate, the motor driver to a knowledge of symbols, will make for better visibility and intelligibility. Most of these points will be found at variance with the recommendations of the report of the committee which we have discussed in this article.

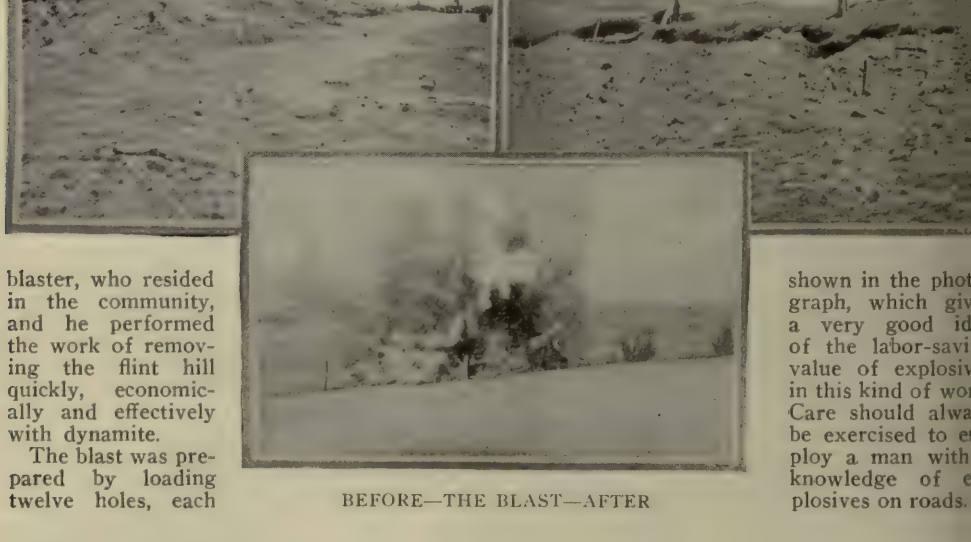
By no means is the beauty of the highway to be neglected, and, even tho certain difficulties will arise, it is quite well worth the effort and necessary legislation to have advertising signs removed from our main arteries of traffic. These signs are often ugly, unsightly, undignified and, in many cases, dilapidated-looking affairs which do not even serve their original purpose of advertising with any degree of dignity the product brought to the attention of the public. There should be no great amount of difficulty in serving the industrial public and at the same time advancing the beauty and dignity of our highways.

The matter of the standardization of highway signs is of sufficient importance to warrant the detailed attention of the various boro, municipal and state authorities thruout the country, from whom further comment is anticipated.

Blasting To Remove a Hill of Flint

Quite recently the highway officials of Athol, Kans., decided to remove a flint hill which made a rather steep grading on one section of the local highway. An effort was made to plow up the obstruction, but this had to be abandoned, for, while the plowshare removed the top soil readily, it made no impression on the flint underneath. Picks and shovels wielded vigorously proved equally futile. In this dilemma the highway engineers turned for assistance to an expert agricultural blaster, who resided in the community, and he performed the work of removing the flint hill quickly, economically and effectively with dynamite.

The blast was prepared by loading twelve holes, each four feet deep, with dynamite. The making of the holes proved a difficult task, as they had to be made with a steel punch bar, the hardness of the flint formation precluding the use of an auger, which is ordinarily used in soil in preparing the holes for the explosive. The blast was fired by an electric battery. The result proved so effective that the blaster was immediately engaged to remove a similar hill in another place on the same road. The appearance of the road before and after the shot shown in the photograph, which gives a very good idea of the labor-saving value of explosives in this kind of work. Care should always be exercised to employ a man with knowledge of explosives on roads.



BEFORE—THE BLAST—AFTER

The Use of Road Oil

Costs and Tentative Specifications Prepared for Highway Engineers

N response to the very general interest in road oiling, the following information has been collected, forming the substance of a Special Report of the Traffic Committee of the League of Iowa Municipalities. The specifications are recommended by the Iowa Commission, subject to alteration if continued experience in oiling roads indicates that any changes are desirable. The discussion of the preparation of the street and the application of the oil was prepared by Captain T. R. Agg, for the Engineering Experiment Station, Iowa State College.

Preparation of Road

The principal preservative function performed by road oil is that of partially waterproofing the road surface so that storm water will soften the surface but slightly in flowing to the side ditches. A road surface with insufficient cross slope will not be as greatly benefited by oiling as will one that is properly crowned.

In view of the marked superiority of the roads that were well graded before being oiled over those that were oiled before they were graded, it would seem desirable to confine oil surfacing to county roads that have been brought to a permanent grade and to city streets that have been well rounded up so as to insure good drainage.

It is evident that the road that is to be oiled should have ample side ditches with good outlets. If water stands in the ditches, it will soften the earth under the oil surface, and vehicles will cut thru the surface layer of oil-impregnated earth. When this



A STUDEBAKER OILER BEING MADE READY TO PROVIDE DUSTLESS ROADS FOR TRAVELERS

happens, the road will deteriorate rapidly, become rutted and uneven. A good rule to follow is to oil only those roads that were graded at least a year prior to the applications of the oil and have had sufficient traffic to thoroly compact the surface. There should have been sufficient observation on the effect of grading to show that the surface and tile drainage is properly cared for.

The surface of the road at the time the oil is applied should be smooth and dense but not dusty. A road that has just been dragged is not in suitable condition for oiling because of the loose material that has been thrown into the traveled track; but after it has been traveled for a few days the road may be dragged again, moving the loose material out onto the shoulder, thus giving a smooth, hard surface for the oil.

Dust on a road precludes the possibility of the oil's penetrating into the hard roadbed under the dust, and the oiled dust will not compact to form a good surface. Unsatisfactory results are certain if oil is spread on top of the dust on a road. Some light soils grind into dust so readily that it is difficult to get them into the proper condition for oiling. On such roads a very fluid oil is more likely to give good results than the heavy, but every possible effort should be made to eliminate all of the dust. It is generally said that the road should be dry at the time it is oiled, but that does not necessarily mean it should be *bone* dry. If the surface is moist, that will not interfere with the penetration of the oil; in fact, there are some indications that it is better to oil on a road that is slightly moist than on one that is very dry.

To sum up, then,—a road that is in condition for oiling will have perfect drainage, will be free from dust and present a smooth, hard, dense surface. Such a condition will be found on the average rural highway in the months of May and June.

Heating Oils in Tank Cars

The tank cars in which road oils are shipped are generally equipped with steam coils for heating the contents of the car. The steam leads, which are usually of about two-inch pipe, will be found on the under side of the tank. A steam pipe is laid to the car, and connection is made to one of the steam leads. The other steam lead is fitted with a valve which is opened just enough to let out the water that condenses in the oil.

A traction engine may be used as a source of steam, or the car may be set near a power plant.

The oils will usually require heating to a temperature of about 150 degrees F., but may be heated to about 200 degrees F. without danger. Beyond that point foaming is likely to take place if the coils in the car leak. Nothing is gained by heating beyond 200 degrees F., and the crew that is handling the oil should be provided with a thermometer so that a temperature of at least 20 degrees F. below the flash point of the oil will not be exceeded.

Transferring Oil

Some means of pumping the oil from the tank car to the tank wagon must be provided, and any one of a number of types of pumps may be used. The ordinary hand-operated tank pump furnished with traction engine tanks has such small capacity that the work is tedious, but this pump is sometimes employed. Its use is advisable only when a single tank of oil is to be handled each season, and even then is of doubtful economy. If more than one tank is to be handled, it will pay to secure a power-driven pump. Of these, the rotary type which is used for furnishing pressure on the distributing wagon is best. These can be purchased at small cost and can be belted or geared to a small gas engine.

A pump of this type should always be set up on the ground so that oil will flow from the tank to the pump by gravity, as the pump will not prime itself. Sometimes it is possible to set the tank on a siding which is on an enbankment high enough to permit the oil to flow to the tank wagon. This is, of course, the most convenient way of unloading when it is possible to employ it.

Time is an important factor in the cost of applying oil. Delays increase the demurrage charges on tank cars and may cause the work to be held up by bad weather. When all the conditions are favorable, a tank car can be unloaded in two days. This is not possible unless the mechanical equipment for handling the oil is adequate and is kept in good condition. A little money spent for a good pumping outfit is an excellent investment.

Oil Distributors

Several satisfactory types of oil distributors are on the market, differing little from each other in essential features. It is desirable that the distributor be equipped with a heating device, so that the oil can be kept hot on long hauls or can be heated in the tank wagon if not in the tank car. The spray should preferably be of the force-feed type rather than the gravity type. A tank capacity of about 600 gallons is as large as it is advisable to use where teams are employed for hauling. If the motor-driven type is used, the 1,000-gallon capacity is as large as can be handled satisfactorily on earth roads.



APPLYING OIL EVENLY ON THE ROAD SURFACE

Applying the Oil

When the road surface is in suitable condition for oiling, there will be danger of putting so much oil on the surface that it will flow to the sides of the road and be wasted, or at least increase the quantity at the sides of the road beyond what is needed. To make sure this does not happen, the quantity of oil applied at one time should not exceed about ¼-gallon per square yard of surface. If a heavier treatment is desired, a second application may follow after the first has been absorbed by the road surface; in warm weather this will not be more than ten hours, and often will not be more than three or four hours.

Covering with Sand

When the oil is applied on city streets, the whole width is covered and vehicles must of necessity use the freshly oiled surface. The oil clings to the wheels of vehicles and is spattered about, soiling clothing, injuring the paint on vehicles and making a disagreeable mess generally. Besides, it is carried on the wheels of vehicles from the street where it is needed. At crossings the oil is carried away on the shoes of pedestrians, and it finds its way into stores and homes. To eliminate these undesirable features of the use of road oils, the surface should be sanded after the oil has been spread. For this purpose it is best to use good sharp concrete sand in sufficient quantity to absorb the excess oil. One half of the street should be oiled and covered with sand before the other half is oiled. The sand ought not to be applied for three or four hours after the oil has been spread, but if traffic cannot be kept off for that length of time, the sand may be put on immediately after the oil is spread. After the street has been under traffic for a short time, it will usually become apparent that a little more sand is needed in some places to keep the oil from picking up. These spots should be covered lightly from time to time until the surface is of uniform appearance and all sticky places have been eliminated. A cubic yard of sand will cover about 350 square yards of surface.

The necessity for the sand covering on rural highways is not so great, because the entire width of road is not oiled and vehicles may keep off the freshly oiled part of the road until the oil has been entirely absorbed.

But as a rule traffic will not avoid the oiled part of the road, and vehicles will carry away a part of the oil from the part of the road that needs it most—the middle. The cost of sanding is small as a rule, and the benefits derived are substantial.

Maintenance of Oiled Earth Roads

Oiled earth roads need maintenance from the first. The oiled layer will flake off or become rutted, and thus the durability of the road will be impaired. These defects can be corrected by dragging, and the surface can be kept smooth and properly rounded. It is particularly important that the surface be dragged after rains that continue for sufficient length of time to soften the surface.

Re-oiling will be necessary each year under average conditions.

Cost of Oiling

Under conditions of 1916, with road oil available in tank car lots at a cost of 5½ cents per gallon, the cost of oiling was about as follows:

Cost of one application, consisting of ½-gallon of oil per square yard of surface applied on city streets where the haul does not exceed an average of one half-mile, and when the surface is sanded, 3½ cents per square yard of surface.

Cost of one application of ½-gallon per square yard of surface for a width of 8 feet, and ¼-gallon per square yard for an additional width of 8 feet on a rural highway, where the average haul does not exceed two miles, will vary from $200 to $225 per mile.

These costs will vary with the efficiency of the organization, the weather conditions, the amount of dust to be removed, and with the kind of equipment available. No items for miscellaneous tools or for interest or depreciation on equipment are included.

Results to be Expected

Surface oiling must be considered primarily as a maintenance method, but repeated oiling undoubtedly results in a cumulative benefit. Oiled roads resist the effect of summer rains quite well, but long-continued wet weather (a week or more with little sunshine between rains) will soften the surface enough so that vehicles will cut into the oiled surface. The oil eliminates most of the dust nuisance, but if an oile road is neglected until it does become dust the dust will be oily and adhere to every thing it touches.

The road or street that is to be oiled mu have a good cross slope and ample ditch or gutters, and must be free from depre sions that will hold water. Disappoin ment is sure to result from oil treatment c roads that are not properly graded.

The surface of a road or street must l dry and hard and free from dust when it oiled. If the surface requires reshapir with the grader before oiling, the ear work must be done sufficiently in advan to insure that the surface will be thoro compacted before it is oiled.

From results obtained on oiled roads u der observation of the Iowa State Highwa Commission, the following specificatio should give good results on the vario types of soil prevailing in Iowa:

Specifications for Road Oils

Specification A.—Road oil for cold applic tion to earth roads (including heavy loa clay or sandy loam).—The road oil shall homogeneous, free from water, and shall n foam when heated to 125 degrees C. (257 d grees F.). It shall meet the following r quirements:

1. The flash point shall not be less than 125 grees C. (257 degrees F.), as determined by the op cup method.
2. The specific viscosity (Engler) 50 c. c. at degrees C. shall not be greater than 40 degrees.
3. The per cent of asphaltenes (total bitumen soluble in 86 degrees B. Naptha) shall not be l than 7.0.
4. The per cent of fixed carbon shall not be l than 4.0.

Specification B.—Road oil for hot applicati to earth roads (including heavy loam, cl sandy loam, sand clay or semi-gravel).—T oil shall be homogeneous, free from wat and shall not foam when heated to 150 d grees C. (302 degrees F.). It shall meet wi the following requirements:

1. The flash point shall not be less than 150 grees C. (302 degrees F.), as determined by the op cup method.
2. The specific viscosity (Engler) 50 c. c. at degrees shall be from 40 degrees to 90 degrees.
3. The per cent of asphaltenes (total bitumen soluble in 86 degrees B. Naptha) shall not be l than 10.0.
4. The per cent of fixed carbon shall not be l than 6.0.

Specification C.—Road oil for hot applic tion to gravel, sand clay or macadam.—T road oil shall be homogeneous, free from wat and shall not foam when heated to 150 d grees C. (302 degrees F.). It shall meet t following requirements:

1. The flash point, as determined by open-c method, shall not be less than 150 degrees C. (302 grees F.).

2. The specific viscosity (Engler) 50 c. c. at 40 degrees C. shall be from 40 degrees to 90 degrees.
3. The per cent of asphaltenes (total bitumen insoluble in 86 degrees B. Naptha) shall not be less than 12.0.
4. The per cent of fixed carbon shall not be less than 7.0.

Specification D.—Special road oil for broken stone and coarse gravel surfaces.*—The road oil shall be homogeneous, free from water, and shall not foam when heated to 175 degrees C. (347 degrees F.). It shall meet the following requirements:

1. The flash point, as determined by open-cup method, shall not be less than 175 degrees C. (347 degrees F.)
2. The float test at 32 degrees C. shall be from 75 inches to 150 inches.
3. The per cent of asphaltenes (total bitumen insoluble in 86 degrees B. Naptha) shall not be less than 13.0.
4. The per cent of fixed carbon shall not be less than 7.0.

Tests of the physical and chemical properties of the road oil shall be made in accordance with the methods as prescribed in United States Department of Agriculture Bulletin No. 314.

* The use of the grade of road oil specified in Section "D" is warranted only on very good macadam surfaces or on gravel surfaces which do not contain an excess of clay or fine material.

EDITORIAL NOTE.—The illustration on the cover of the Town and County Edition of THE AMERICAN CITY for this month shows a motor truck operated by the city of Pasadena, Cal., almost exclusively in repairing oiled and oiled macadam streets. In this work about one yard of crushed rock and screening are loaded on the truck in the morning, and a trailer with an oil tank equipped with a gasoline burner for heating the oil is trailed behind the truck. This has been found the most economical method for repairing streets, altho the mileage per day is rather low owing to the frequent starting and stopping. In the first seven months the truck was operated it covered 3,500 miles and was of great assistance in maintenance and repair work.

How Pennsylvania Will Use Its $50,000,000 Good Roads Bond Issue

FOR twenty years Pennsylvania's progress has been retarded because of its poor highways. No commonwealth can advance faster than does its road construction program, and during the next four years Pennsylvania proposes to secure the best highway system in America.

In 1913 the state voted down a proposition to bond itself for $50,000,000 for road construction; in 1918 the same proposition was before the voters. In 1913 the adverse majority was 41,000; in 1918 the majority for the bond issue was 262,000, showing a turnover in the five years of 303,000 votes. The success of the 1918 campaign was due in large measure to the backing of State Senator William C. Sproul, who, during his campaign for election as governor, announced that he favored the bond issue, and that if elected he would do everything in his power to end the Mud Age for Pennsylvania.

The Associated Highways Organization of Pennsylvania, composed of representatives of the majority of good roads associations in the state, took active charge of the campaign for the bonds. It enlisted 14,000 Pennsylvanians, known absolutely to be good roads boosters. It circulated millions of pieces of literature; and the newspapers and good roads magazines published thousands of columns of news stories sent out by the Association.* Less than half a dozen newspapers opposed the bond issue; prominent labor men and officials of the State Grange gave the proposition their endorsement; and when the votes were

* See the Town and County Edition of THE AMERICAN CITY for November, 1918; page 353.



THIS WAS THE PRIMARY REASON WHY PENNSYLVANIA VOTED $50,000,000 FOR GOOD ROADS

counted, it was found that only four counties among the sixty-seven in the state had voted against the bond issue—and in these four the adverse vote was not much greater than the favorable vote.

With $50,000,000 available for road construction from the bond issue, the administration plans the construction of a system of primary highways which, with proper maintenance will last for all time.

The primary highway system is planned to consist of 3,500 miles of trans-Pennsylvania north-south and east-west roads. The entire cost of completing this system will be met by the commonwealth itself. The construction will be of concrete, brick, or similar materials. The Highway Department plans the completion of 550 to 600 miles during 1919. It opened bids for 60 miles on March 20. Representatives of 220 contracting firms were present. The Highway Department regarded the great numbers of bids submitted, and the number of firms represented, as evidence of the faith of contractors in the Department and the administration.

Pennsylvania will construct no permanent highways thru boros, it is announced, until all sewers, water and gas mains, steam and electric conduits have been put down. Before it begins work on boro construction, it must have the municipality's agreement that the pavement will not be disturbed for five years, unless in an emergency case; and it insists that vacant-lot owners, all other property holders, and all public service companies anticipate the future and put down pipes and conduits. It will insist that electric railroad beds be made permanent. The Department will not put permanent construction on a highway route on which there are numerous grade crossings. It insists that all possible grade crossings be eliminated before work starts. It has ignored the requests of individuals who have exerted "pulls" in the effort to get permanent highways in front of their properties, and, announcing that the primary highway system is for the benefit of the state at large, has consistently refused to build paralleling highways thru any one section.

While the state is busying itself with the construction of its system of primary roads, it is not confining its activities solely to that system. It is joining with counties in the construction of roads of purely local importance, and the counties themselves are building hundreds of miles of such thorofares. Pennsylvania has a state-aid system thru which the counties and their townships join in the payment of half the cost of road construction, the state paying the other half. The state-aid appropriation to the Department for the years 1918-19 is $3,000,000, which will mean construction totalling $6,000,000 when the counties and townships join.

In addition, the counties are playing "a lone hand" in the building of better highways. Because the commonwealth itself is paying for the primary highway system, dozens of counties will put into secondary roads a sum of money equal to or greater than that spent by the state on the primary system. Thru county construction and the state-aid method, there is to be built an interlocking network of roads which will couple the routes comprising the primary system. West of the Allegheny Mountains counties have pledged coöperation which will obligate them for $25,000,000. The counties of eastern Pennsylvania are not so enthusiastic, but the fever is getting hold of them.

The bonds to be used in paying for the primary highway system are to be for 30 years. No highway will be built whose life will end before the bonds that paid for it have matured. Consequently, construction must be as nearly permanent as it is possible to make it. The maintenance will be built into the road—and then money will be spent to keep the highway surfaces in condition. The foundations, with reasonable care of the surface, will be in use long beyond the time of folks now living. Such construction will prove to be far-sighted economy.

The Finishing of Concrete Roads by Machine

By E. G. Carr

Consulting Highway Engineer, The Lakewood Engineering Company, Cleveland

A CONCRETE road may be defined as a slab of concrete upon a country roadway to provide a hard surface for traffic under all weather conditions.

It will be assumed in this article that the slab has been properly designed with reference to the character of the soil and the traffic to be carried. These problems must be solved by the knowledge and experience of the engineer. It is the object of this article to direct attention more particularly to the character of the concrete slab and its construction.

Concrete in roads is subjected to more severe conditions than are ordinarily encountered when it is used for other purposes—abrasion of the surface and the pounding effect of traffic, which causes strains not common in other concrete structures.

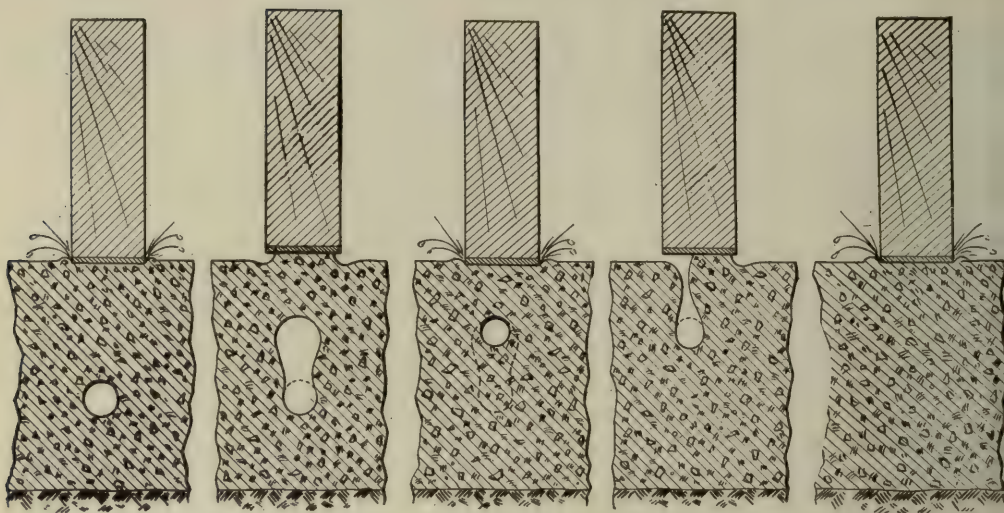
A continuous slab of concrete on country soil is also subject to expansion and contraction caused by changes in temperature and water absorption. Hence, concrete for roads must be *better* concrete. It must be more dense and uniform than for most other uses. A small amount of inferior concrete in a wall may be protected and supported by the stronger concrete surrounding it. In a road the traffic hunts out the weak spots with fiendish ingenuity, and these places will fail regardless of how good the surrounding concrete may be.

Concrete cannot be compressed like a bale of cotton, and it can be compacted only by creating a flowing or crawling action in the concrete mass, so that the larger aggregate will settle closer together, and the smaller particles will fill the remaining voids.

There are three ways common in molding concrete to reduce voids. Two are detrimental and one beneficial to the strength of the product, and all three are generally employed in varying degrees. One way is to add excess water until the concrete literally flows in place by gravity. Another method is to use finer aggregate so that there will be less voids to fill. The third way is to stir it, tamp it, roll it, shake it, or do anything to move the more loosely ar-



THIS MACHINE SPREADS, TAMPS AND FINISHES THE CONCRETE, THE TAMPER STRIKING TEN TIMES IN ITS OWN WIDTH



ILLUSTRATING HOW ENTRAPPED AIR IS REMOVED FROM CONCRETE BY ALTERNATING PRESSURE

From left to right (1) air compressed; (2) air expanded in path of least resistance; (3) air bubble again compressed nearer surface; (4) air bubble breaking thru surface; (5) air bubble entirely removed

ranged aggregate so that it will fall into closer and more compact position.

The use of excess water impairs the strength, makes the concrete porous and causes the lighter material to float to the top and cover the surface with laitance and foreign material which may have found its way into the mixture. In some concrete structures there is an advantage in having the best concrete at the bottom, but it is evident that the best concrete should be at the top of a road.

Engineers have long known that an excess amount of water used in mixing will cause a considerable loss of strength in the concrete. Exactly what ratio exists between water content and strength has recently been shown by the extensive investigations of Professor D. A. Abrams, of Lewis Institute, Chicago. The use of too much water cannot be blamed unreservedly on the contractor, because heretofore methods have not been developed for the practical use of stiff concrete for roads. The size of the aggregate governs largely the amount of water needed to give a workable concrete. The smaller aggregate requires more water.

If a road were built of a rich mixture of cement and fine aggregate, the cost would be excessive and the expansion and contraction would be greater than if a mixture of fine and coarse aggregate had been used. Moreover, when a contraction crack forms in a concrete road, the coarse aggregate dovetails the slabs together, holding them in their original relative position. The greater the proportion of good, clean stone, mixed in a given consistency of cement mortar without forming voids, the better the concrete will be for roads.

While concrete used for building roads presents more than the ordinary disadvantages in the use of excess water or fine aggregate, it offers exceptional opportunities for mechanical compacting on account of its accessibility. The method of applying force in mechanical compacting must be such that the larger pieces will not be displaced after they have settled to their best relative positions. The applied force must not drive a stone past the best place for that stone to stop, and the only available means for stopping that stone at the right place is the increased resistance offered to the movement of the stone by a more compact mass than the mass in and with which the stone is moving.

Assume that we have an agitating force with a limited violence, or a tamper with a given stroke. A greater frequency of strokes enables us to make a stiffer concrete flow. It is this principle—the rapidity of agitation—which yields the unique advantage that mechanical tamping has over hand work. Under a rapid succession of

trokes, the concrete literally flows as a re-
ult of the agitation, and the mass is in a
emi-liquid condition. The drier and
oarser the concrete, the less it will move
nder the influence of a single stroke, and
he sooner it will be at rest again. To ob-
ain the advantage of a moving friction,
he succeeding stroke must come while the
oncrete is still in motion.

Voids in concrete are a source of weak-
ess and, if beneath the surface, may not
e detected until the raveling of the aggre-
ate under traffic exposes them. Therefore
he effect of the agitation must be in all
irections, and the agitation must be con-
inued and repeated until there is a reason-
ble certainty that the desired result has
een accomplished.

Starting with these ideas, the writer de-
eloped the concrete road finishing machine
hown here.

After numerous experiments, it was
ound to be exceptionally advantageous to
tilize suction for the purpose of agitating
he concrete mass.

If the concrete in walls, for example, be
gitated, it will be noticed that the concrete
ear the surface is easily shaken into shape,
hile it is difficult to produce any move-
ent in the bottom of a deep layer of con-
rete on account of the weight of the con-
rete above. This is so obvious that it
ould seem to be unnecessary to direct at-
ention to it. Any additional pressure in
he direction of the force of gravity tends
o bridge, arch or bind the aggregate in the
ositions assumed under the force of grav-
y, instead of facilitating any movement
n the mass that would rearrange the aggre-
ate into more compact positions. A key-
tone of an arch is not displaced by down-
ward pressure upon it.

It was found that by creating a vacuum above the concrete mass in one place, mortar was forced towards the vacuum space, disrupting the binding of the aggregate, and permitting the pieces to settle into more compact positions—hitting the keystone from the bottom, so to speak. The idea can be well illustrated by a log jam. Force applied to the up-stream side of the jam only wedges the mass more firmly; it would be readily broken by pressure applied below the jam by a reversal of the current.

In the machine illustrated, the suction is obtained by the tamper templet, which is raised with a jerk after hitting the concrete —alternately driving the concrete away and jerking it back. This action removes the entrapped air, giving a dense concrete.

The machine illustrated is so constructed that the speed, length and intensity of the strokes can be varied at the will of the operator to meet all the different consistencies of concrete and all the conditions found in road work.

A laborer tamping concrete would pass over the surface if it appeared finished. The machine tamps thoroly and uniformly. As it works forward and backward, it attacks a bad arrangement of aggregate, first from one direction and then from the other, insuring a slab of uniform density.

Besides the advantage of more thoroly and uniformly compacted concrete, machine finishing is a more dependable means of obtaining a true, even surface, thereby reducing the vibration and wear on the pavement and vehicles.

Acknowledgment.—The above article has been prepared from a paper in the Short Course in Highway Engineering at the University of Illinois, on February 18, 1919.

Joints in Concrete Roads

Road-builders have been laying concrete oads for a number of years, but they still dif-
er radically regarding the need of joints. ome engineers believe that these joints do ot prevent cracking and that it is better to lay he concrete without joints except where the ay's work ends. They believe that the cracks n well-built roads are unimportant and the ost serious objection to them is the appear-nce of the black streaks across the gray con-rete where the cracks are filled with bitu-inous material and sand by the repairman. They consider that joints merely add to the number of seams that must be filled with this material.

There are more engineers, however, who hold that joints should be left at regular intervals. Joints are placed about every 30 feet apart in Connecticut, for instance, where the state road authorities believe that a straight, well-made joint can be much more easily cared for than any ragged crack which might result if no joints were used or if the distance between them were lengthened.

The Organization and Administration of Convict Labor Camps for Highway Work

Road Camps Are Beneficial to Convict, State and Community

THE recent report of the Committee on Convict Labor of the American Road Builders' Association contains a great deal of information which should interest highway officials thruout the country. The committee made a very thoro study of the problem of convict labor on highway work and found that the employment of prisoners in this manner had been very generally satisfactory and had greatly increased the morale of the men.

Organization of the Work

In the majority of states the highway commission requisitions from the superintendent of the state penitentiary the number of prisoners desired, giving an idea of the class of work which is to be undertaken. The superintendent supplies the men with a sergeant and guards, usually one guard to approximately ten men. The sergeants and guards are usually selected from the list submitted by the highway commission and may be discharged on their own written request. The sergeants usually receive about $75 a month and board, and the guards $35 and board. It is the custom in West Virginia for the counties to make application to the highway commissioner and for the commissioner to requisition the Board of Control for the necessary prisoners.

Rules and regulations for governing and working the prisoners are formulated by the highway commissioner and the superintendent of the penitentiary or the authorities in charge of the prisoners. The sergeant has charge of the camp and its discipline, and has general supervision over the guards, who report to him. Work on the road in a quarry is carried on by a superintendent of construction or maintenance.

Any breach of discipline is reported immediately to the sergeant. In the majority of camps in West Virginia the duties of the sergeant and the superintendent of construction have usually been combined, thus doing away with any possibility of conflict of authority and enabling the officials t increase the salary from $100 to $125 pe month with board. In a number of in stances it has also been possible to us guards as foremen or sub-foremen, thereb increasing their pay from $50 to $60 pe month and board. All construction an maintenance work is carried on under th direct supervision of the Highway Depart ment.

The Camps

The camps for the prisoners working o the road are usually divided into thre units: (1) the house for sergeant an guard, measuring 16 x 28, divided into tw rooms; (2) the dining-room, kitchen an storeroom, measuring from 24 x 60 to 24 80 feet; (3) the bunk room for prisoner measuring from 24 x 60 to 24 x 80 fee The size of the last two units depends en tirely upon the number of prisoners in th camp. Many camps in West Virginia hav metal roofs with canvas sides, are heate with stoves, and supplied with the necessar cooking utensils, blankets and general cam supplies by the superintendent of the peni tentiary. The sanitary arrangements ar under the state board of health, and a loca doctor is appointed for each camp. Th camps are usually surrounded with plai wire fences.

Cost Data

In order to be able to compare this con vict labor with regular day labor, an effor has been made to obtain the cost of al material used, particularly the cost of foo and clothing, also the cost of general super vision, guarding and transportation, and i addition to get the unit cost of all road ma terials handled. From this the final cos of the work can be computed. It has bee impossible in most states, because of lac of sufficient funds, to obtain as detailed in formation in regard to the cost of the work as might be desired, and only thru the ex perience gained in years of employing con vict labor has it been possible to use it t the best advantage.

Benefits to the State

The chief benefit to the community and the state thru the use of convicts in road work is the general improvement in the criminal classes. This has been particularly marked in many states, as shown by the great falling off in the percentage of return of prisoners to the penitentiary, and by the location of these prisoners in useful occupations after their terms of confinement. The labor is used for the development of the state as a whole, and furthermore creates in the prisoner an interest in a constructive occupation.

Benefits to the Prisoner

A great deal of welfare work has been carried on in penitentiaries among the prisoners. In general it has been found that such work as highway construction, which takes the prisoner outside the walls of the penitentiary, has proved far more satisfactory and beneficial than welfare work conducted within the prison. The work on highways generally improves the prisoner both morally and physically. It is good, healthy, out-of-door labor, with regular hours and good food.

Any state that is not using its criminals outside the prison walls at present should know that there is probably no manner in which they may be employed with better results than in road work. The character of the criminal himself is built up; he soon learns that the work which he is doing is of value to the state as a whole, and he takes pride in it as he grows to feel himself instrumental in the development of the state whose laws he has broken. He is increasing the resources of the state thru the construction and maintenance of the road, to which is primarily due the development and expansion of these resources. Prisoners are not used solely as common laborers in handling stones, but are trained in all classes of road work. Trusties are made roller men, firemen, blacksmiths, carpenters, drill runners, concrete men, etc., these men being selected by the sergeant from the better class of prisoners, which make up from 25 to 36 per cent of the criminals. In considering the use of convicts on road work it is particularly recommended:

1. That the law be made clear and explicit as to the authority of the Highway Commission.

2. That the men capable of work, in the judgment of the state physician, be placed on road work.

3. That the prison population be divided into four classes as follows:

Class 1, parole men
Class 2, trusties, both convicts and jail prisoners
Class 3, short-term convicts and jail men
Class 4, the long-term and dangerous men

Class 1 men are those who might be paroled for good behavior and good work on the recommendation of the Commission. They wear ordinary clothes and are paroled to the maintenance division of the highway department and assigned to various sections of the state roads to be used as patrolmen, or in gangs for the maintenance of the roads which they have constructed under state supervision. These men would be furnished with proper quarters, would be paid a monthly salary from the maintenance fund of the state, the amount to be determined by the highway department. Virginia pays $25 per month to men of this type and finds that this plan works very well. The patrolmen under this class are made a regular part of the state free labor road force, the only difference being that they are required to comply with the general parole laws of the state.

Class 2, made up of trusties, or, as they are called in some states, honor men, are those taken from Class 3 as they develop. These men work without guard either in camps composed entirely of trusties or distributed in other road camps as the needs may require, to be used as cooks, drivers, engine men, roller men, spreaders, and in small gangs in the construction of concrete bridges, culverts and head-walls. As a matter of fact, these men would be used just as ordinary free laborers, and are paid something more than Class 3, the amount possibly greater according to the class of work which they do.

Men coming under Class 3 are first-term convicts from the state penitentiary and prisoners from city and county jails, and such men from Class 4 as have been found by experience trustworthy even in a small degree. These men should have some distinctive dress, such as blue or brown. They may be distributed thruout the state to the various road camps, to be worked under guard in the construction of the important highways, a reasonable per diem to be

paid for their work, one-half of which will be paid them at the end of each month and the remainder at the end of their sentence.

Class 4 includes all murderers, prisoners sent to the penitentiary for second and third offenses, and men with records known to have been bad prior to their sentence. It is necessary to dress these men in distinguishing uniforms, altho it is regrettable that this should be necessary. These men should be worked inside stockades in quarries, in gravel pits, and in the manufacture of vitrified paving block.

Payment of Prisoners

In several states arrangement has been made for paying prisoners a daily wage of from 5 to 25 cents, and in West Virginia they are paid 15 cents per hour for ov time after nine hours.

A letter from the National Committee Prisons and Prison Labor, dealing with question of wages for convicts employed road-building, contains a plea that provisi be made to pay wages to convict labor accordance with an executive order issu by the President, September 14, 1918. committee therefore recommends that periments in convict road work in su states as New Jersey and Iowa be enco aged, as in these states the Legislatu provide for the payment of wages. Fr these experiments it will be possible to data for a comparison of the results tained under the wage system with th obtained under the old system.

The Formation of the Federal Highway Council

AN interesting development in connection with the good roads movement is the organization in Chicago on April 8 of the Federal Highway Council, of which S. M. Williams, Lima, Ohio, is chairman, and H. G. Shirley, Baltimore, Md., secretary and treasurer, the vice-chairman being General Coleman du Pont, Wilmington, Del., David Jamison, New Castle, Pa., Charles P. Clifton, Buffalo, N. Y., Louis J. Hill, St. Paul, Minn., A. H. Blanchard, New York, and C. F. Adams, Chillicothe, Ohio.

The Federal Highway Council will endeavor to coördinate the activities of organizations and individuals in every section of the country in connection with the creation of a Federal Highway Commission and the organization of a national system of interstate highways. State highway officials representing forty states have recorded themselves in favor of the placing of the national system of highways in the hands of a national commission, for the reason that the individual states have found it difficult to develop a satisfactory highway system thru any arrangement between the state and its subdivisions. The same objection obtains in coöperative work between the states and the Federal Government, for the reason that the highways of most importance to one state do not always meet those of importance in the next state at the state lines, thus embarrassing thru-traf

Speakers at the Chicago meeting urg the building of national highways to m the requirements of the heavy volume interstate travel, and the fact was a brought out that the highways are carry more traffic, both freight and passeng than is being carried on all of the railw of the United States. Mr. Williams, chairman of the Federal Highway Coun called attention to the fact that natio highway development results in an creased earning capacity and efficie which makes the initial cost of the highv improvement seem like a relatively sm item, every mile of improved highway sulting in lower costs of farm and ma factured products as well as greater earn possibilities for the agricultural districts

The Townsend bill, providing for a tional road-building appropriation of $4 000,000, already introduced in Congr which would create a national highv system under the Federal Highway Co mission, was thoroly discussed section section, and all of its important featu were endorsed except the salary provisio attention being called to the fact that, order to secure proper management maintenance, it would be necessary to p vide for sufficiently large salaries to ins the very highest quality of executive di tion.

Motor Trucks Build Good Roads In Benton County

By E. S. Rife
Construction Engineer, Benton County, Iowa

ABOUT two years ago it was decided by the highway authorities of Benton County that the roads ought to have more attention than had been given to them along the usual lines of patching and repairing, and that a genuine constructive program of road development should be hauled from the pits and placed on the road. Sand, gravel and other materials were hauled for concrete bridge and culvert work, and, incidentally, men and materials were moved from place to place, thus effecting considerable saving in time. The Board of Supervisors purchased a Dart



MOTOR TRUCKS DO ALL KINDS OF JOBS IN BENTON COUNTY

(1) Hauling pile driver and concrete forms in bridge work; completed bridge in background. (2) Moving bridge supplies and concrete mixer. (3) No. 1 truck equipped with dump body and hoist; completed bridge in foreground. (4) No. 2 truck unloading road materials

started. A canvass of the whole labor situation resulted in a decision that the shortage of man power and teams made it absolutely necessary to employ motor trucks in road work.

After a careful inspection and analysis of the hauling problem, a 3½-ton truck was put into service, and was operated during the whole of 1917 in general road work in the county. It was equipped with a hydraulic hoist and dump body. Gravel was truck because of the nearness of Benton County to the factory, feeling that in the matter of necessary repairs during the operating season, unusual delays could be avoided and that the truck could thus be kept in more continuous service.

Benton County contains one section of the Lincoln Highway, and this was among the first of the county roads to be put into good condition, as a matter of civic pride in maintaining the reputation of this famous

thorofare. Practically all the county roads are dirt roads, which are very common in Iowa; in fact, there are probably no paved roads outside of the larger towns. The Board of Supervisors decided that the main arteries of travel ought to be well graded, crowned and graveled, and that substantial concrete bridges and suitable culverts should be built.

The first truck proved so successful in 1917 that the Board purchased another truck, similar in size, equipped with a road oiler and heater. However, because of the impossibility of securing suitable oil in the quantities needed, the county did not use the oiler during the 1918 season. A third truck of the same capacity was put into service, equipped with an ordinary open express body for carrying diversified materials.

Some of the gravel used in surfacing the dirt roads is hauled a distance of nine miles before it is placed on the road surface, and on many occasions four or five trips were made by a single truck in one day. This would have been impossible with horse-drawn wagons; in fact, previous to the purchase of the trucks, the county employed seven teams and drivers to do this work. At the present time, these two trucks are more than equalling the service formerly performed by the seven teams.

When it came time to figure up the cost and saving effected by the use of motor trucks in Benton County, it was found that in each season that the trucks were used they had saved the cost of one truck, thru the elimination of the seven wagons previously employed for road work. The trucks are kept in charge of a competent man, who maintains them in excellent condition by inspection every night. During 1917 and 1918, the trucks were operated from very early in the spring until as late in the fall as it was possible to do concrete work without having it affected by freezing. Thruout both these long seasons, in spite of the weather and road conditions, the trucks were operated every working day.

One of the chief points which we consider of vital importance in the use of trucks in road work is constant inspection, cleaning and maintenance work by an expert mechanic. No machinery, no matter how well built, will last and give full service unless it is well cared for. Furthermore, trucks should be housed every night when not in use, and at such times during the day as weather conditions make it advisable. It is only thru constant care and vigilance that the full benefit of motor truck service in road construction can be obtained and maintained.

Demonstration Roads to Boom Construction

By George Stephan
Lieutenant Governor of Colorado

IF the people of the country realized the importance of good roads, they would not hesitate to invest the money necessary for such work. Road construction is necessary at the present time for the reason that during the last ten years there has been very little railroad building. At the present time, railroad mileage in the United States is decreasing instead of increasing, and for the development of the resources of our country it is absolutely necessary to have increased transportation facilities. During this period of reconstruction, railroad building being at a standstill, it is important that first-class roads be built in order to increase our transportation facilities and thereby develop the country.

As a means of education, I have therefore suggested that the state of Colorado build for demonstration purposes, adjacent to small cities and towns of importance, short stretches of first-class road, even tho they may not be more than one half-mile or one mile in length, these roads to be built especially where there are few or no cement streets in the adjoining cities or towns.

I firmly believe that when the farmers have an opportunity of driving over short stretches of first-class road on their way to and from town, they will not only appreciate the good road that they pass over, but it will emphasize to them the bad condition of the rest of the road and thus demonstrate to them the importance of good highways.

Reduction in Freight Rates on Road-Building Materials

ONE of the most effective means of increasing road building in the United States this season has been the unbounded enthusiasm of taxpayers in voting large bond issues to enable highway officials to push the work to the limit. Previous to the first of May, the effective prosecution of road work was considerably hindered by the high freight rates on road-building materials. However, the Director General of Railroads announced about the middle of April, after a conference with the Departments of Agriculture, Commerce and Labor, that the tariff rates upon specified building materials for use in federal, state, county, township or municipal government road work would be materially reduced.

The authorization permits railroads under federal control to apply the reduced rates given below on car-load shipments of stone (broken, crushed and ground), slag, shells, chatts, cherts, sand and gravel, shipped during the period from May 1 to December 31, 1919, inclusive, when for use in road building or road maintenance, and when consigned to, and the freight thereon paid by, the federal, state, county, parish, township or municipal government.

The reduced rates to be applied on such material will be 10 cents per net ton less than the regularly published tariff rates in effect for the transportation of these materials for commercial uses at the time shipments move; but with a minimum charge of 40 cents per net ton, except that where the regularly published commercial rate is less than 40 cents per net ton such regularly published rate shall apply.

These reduced rates may be applied on shipments consigned as outlined above but in care of a contractor, provided the freight is paid by the government ,and provided proper certification is made by the government thru its properly accredited representative that the shipments are for the use of, and the reduction in the rate will accrue to, the government.

The rates authorized are to be applied without publication in tariffs, account government property, but each railroad hauling such material is charged with the duty of seeing that the reduced rates are applied only on bona fide government material where the freight charges saved by the reduction will accrue to the government as indicated above.

In order to secure the full benefit of the reduction in freight rates, it is necessary for the federal, state, county, parish, township or municipal government to certify that the material will be used for road work and that the governmental unit represented will be benefited by the reduced rates; in other words, that the entire benefit of the reduction will accrue to the governmental unit and not to contractors or other private interests. It has been carefully explained that the word "government" used thruout the official statement concerning the reduction in freight rates means any governmental unit dealing with road and street work and not solely the Federal Government.

The materials can be shipped in care of the contractor doing the work, but the governmental unit will be responsible for the freight charges and for seeing that all of the material is used for road and street purposes. Payment on all freight must be by the different governmental units, and made to the railroad company, it being the intention that the benefits derived therefrom shall apply to public road and street work only, and that the public shall have the benefit of the reduction in rate.

It was hoped by all those interested in road construction that the Railroad Administration would be more liberal in the matter and give at least 20 cents per ton, which would have been a great stimulus for the Federal Government, the states, counties, and other governmental road units, to immediately begin a large amount of work, and thereby start up industries and tide over the trying period of business stagnation.

RURAL PLAYGROUNDS

The country child needs:-All-round physical training.
Socialized, supervised play.



Every Community
should have a playground
which should be

Well-kept and attractive.
Large enough for base ball, etc.
Equipped for athletics.
Properly supervised.
Suitable for a neighborhood recreation center.

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ONE OF A SERIES OF POSTERS AND PANELS ON COMMUNITY ACTIVITIES RELATING TO CHILD WELFARE WORK, OBTAINABLE FROM THE NATIONAL CHILD WELFARE ASSOCIATION, 70 FIFTH AVENUE, NEW YORK CITY

Making Life Worth While in a Small Town

By E. R. Pease

THE town of Richland Center, Wis., has accomplished some things in the way of community organization and improvement that may be of interest to other sections. This is a strictly agricultural community, a county-seat town of 2,800 population, centrally located in a small, rather rough dairy country in southwestern Wisconsin, noted for its high-class American cheese and its abundant milk production. Neither in the town nor in the county are there any men of great wealth, nor are there many very poor people.







Richland Center has a fireproof auditorium seating 926 persons, with a modern stage 30 x 50 feet and fourteen individual dressing-rooms with outside lighting and ventilation. The auditorium building also contains the City Council Chamber and the City Clerk's office, the offices of the City Treasurer and the superintendent of the water and light plant, and a Commercial Club room which is also used for other than club meetings and at present accommodates the Red Cross. There is also a Ladies Federated Club room with a kitchen equipped to provide banquet facilities for 125 persons. This room with its equipment is for rent for public purposes under the superintendence of the Ladies Federated Clubs. The building, its site and equipment represent a total investment of approximately $63,000. It was built seven years ago by a bond issue of $40,000 supplemented by money raised by direct taxation. The bond issue took care of the general contract and the heating contract.

The building of the auditorium and its management as a municipal undertaking were no doubt due to a firm belief in the success of municipal operation, a belief based upon experience with our municipal water and light

ATTRACTIVE PUBLIC BUILDINGS IN RICHLAND CENTER, WIS.

Top—High School
Middle—Auditorium
Bottom—Public Library

plants. This faith has been proved well placed, for as a center of common interest and as a stimulant to civic pride the auditorium has already amply paid for itself, to say nothing of the many advantages that it has offered to our people which would otherwise have been impossible. Its large capacity, often taxed to the utmost, has enabled us to hear such speakers as Taft, Bryan and Maud Ballington Booth; to listen to many noted musicians and to enjoy high-class drama and opera, as well as Chautauqua and lyceum programs and local entertainments.

The Federated Club rooms are the gathering-place of several clubs, the chief of which is a women's club of about one hundred and fifty members, and many of the club programs would do credit to larger communities. The club rooms and their facilities are used by persons and organizations that wish to entertain in a large way. Anyone who drops in upon one of the social gatherings under this hospitable roof realizes that the building with its facilities occupies a large place in our hearts.

Besides the auditorium, Richland Center possesses the municipal electric light and water-works plants already mentioned, four miles of paved streets, a Carnegie Library, a High School with accommodations for 300 students, a city and high school band of seventy-five pieces, three city parks, many miles of cement walks, a beautiful city cemetery, and a community spirit which we believe is unsurpassed anywhere. The taxable valuation, as equalized by the county board, is $4,619,442. Our tax rate is $2.26 per thousand, and our total bonded debt for all purposes is well under $100,000.

Some persons who have admired ou auditorium, high school and other publ institutions have asked if we had not amon our people a number of wealthy persons o large taxpayers. At the time of buildin the auditorium, Richland Center had on taxpayer who paid $6,000 annually, one wh paid $3,000, one who paid $2,500, three wh paid $2,000, two who paid $1,000, and eigh who paid between $500 and $800. The re mainder paid annual taxes of less tha $200. Since that time the Carnation Mi Products Company has come to Richlan Center, and has developed into a large tax paying institution. Last year, for exampl the company's real estate and personal pro erty taxes netted approximately $7,000, an our share of the state income tax of th company brought us $9,000 additional.

The municipal water-works are fully pai for. The electric light plant turns ou nearly 600,000 K.W.H. annually and has debt of only $6,000. The auditorium nearly half paid for. There are new schoo buildings with exceptionally fine ground and other community assets which have a ready been mentioned. The tax rate based on an 80 per cent valuation, alth sales show that in some cases this percen age is high. One thousand dollars has re cently been set aside for park developmen and the people are beginning to dream als of a municipal heating plant. There are n saloons or saloon licenses to depend upo nor have there been any for the last fou teen years; so that what the community ha and looks forward to, all comes, and is t come, from willing taxpayers united in common cause and animated by a desire t promote the common good.

Financing Associated Charities

The predominance of war activities during the past year or two found the Associated Charities of Mitchell, S. Dak., without funds on January 1, and $500, in addition to the amount appropriated by the County Commissioners, was needed to carry the work thru 1919. The money has previously been raised by soliciting the business interests, an easy method, but unfair, in that a certain few are always obliged to foot the bill. The Mitchell Chamber of Commerce devised another plan this year in an attempt to distribute the burden more generally. One week before Lincoln's birthday the daily papers announced that on the following Monday the Boy Scouts woul leave an envelope to receive money for thi purpose at every home in the city, and that a nine o'clock on the morning of Lincoln birthday, two days thereafter, the whistle would blow a long blast as the signal fo forty-two high school girls, armed with canva sacks, to go out and pick up the envelope These canvas sacks, when they were collected were found to contain $900, nearly all in on dollar bills. With only about 1,500 homes i Mitchell, this result was truly remarkable. Th Chamber intends to make the campaign an an nual event.

The Public Library in a Small California Town

By Blanche A. Gardiner
Librarian, Public Library, Eagle Rock, Cal.

ONE of the most progressive and popular libraries in the West is to be found in the town of Eagle Rock, Cal. The site was carefully selected, so as to be in the center of the business district and at the same time accessible to the various car lines and main boulevards leading to near-by cities.

The building is of the Mission type, with red tile roof, and exterior walls of cement over hollow tile. It cost $7,500, was a gift of Andrew Carnegie, and is maintained by direct taxation, Eagle Rock being a city of the sixth class. The interior is a large T-shaped room, with the Librarian's desk in such a position as to command a view of the entire space. Behind the desk is the office and workroom combined. On each side of the main entrance are large bulletin boards, where notices of local events are posted from time to time, as well as items of interest in Los Angeles and neighboring cities.

The building is heated by four gas floor furnaces, each operating independently of the others. The semi-indirect system of lighting has been installed exclusively thruout, 100-watt lamps being used in each fixture.

The book-shelves are built into the walls, and the high windows above afford ample light for all purposes. The space between these windows is sometimes used for local art exhibits and pictures of California wild flowers. The art teacher of the grammar school sends an exhibit of the pupils' work each summer to be displayed until the opening of school in the fall.



THE EAGLE ROCK, CAL., PUBLIC LIBRARY, A VALUABLE ASSET

The paper covers from the new books are classified and posted in conspicuous places in groups, thus making illustrated catalogs of the various subjects. There is also a glass show-case in which are kept many war trophies loaned by residents of the city. On a high shelf over the Librarian's desk repose the various loving cups and plaques won by Eagle Rock floats at the annual Tournament of Roses held in Pasadena on New Year's Day. The service flag of about 60 stars and also the honor flags of the third and fourth Liberty Loans adorn the walls. During the war, wheatless and meatless recipes donated by local housewives, as well as government publications on the same

subject, were given a prominent place, and duplicate copies of them were freely distributed.

A new feature is the renewing of books and magazines by telephone. Requests for special reference work may also be made in the same way, thereby giving the Librarian time to collect the material before the student arrives.

One of the most interesting sections of the Library is the auditorium, which seats about 150 persons. It has an outside as well as an inside entrance and is partly below the level of the ground. Here the Boy Scouts hold their meetings, using the cement floor for their drill work. They have been fortunate enough to listen to many an interesting soldier or speaker lately returned from Europe. The old soldiers also use the auditorium, meeting there many of their old comrades of the G. A. R. The W. C. T. U. of Eagle Rock was organized and its officers elected in the same place. The raised platform at one end of the room makes it more convenient for public speaking.

The Chamber of Commerce considers the auditorium its home, and many a resolution for the good of the community has been drawn up within its walls. The children look upon it as a place where their "story hour" is held on Friday afternoons., In fact, all committee meetings from the Red Cross, churches, etc., are always welcome, the only requirement being that the Librarian must be notified in advance, so that no two organizations will plan to meet on the same evening. There is no charge made for the use of this room. On the same floor are the storerooms and lavatories, and the latter are accessible from both the inside and the outside of the building.

Book parties have been held in the main part of the building, and speakers and authors entertained, the only admission to these affairs being the donation of a book. Recently the young people of the city were anxious to build up the music department of the Library, so, under the auspices of one of the music teachers, a piano recital was given and the proceeds donated to the cause.

Eagle Rock can almost be called a college town, for Occidental College is located at its southern boundary and many of the students live with their friends or families within its gates. Naturally this helps to raise the standard of reading, as these pupils use the Library for study and reference work. The Eagle Rock Public Library is one of the few where the monthly circulation (estimated at 2,000) far exceeds the population, and where one-quarter of that circulation is of the non-fiction books.

The city is contemplating the purchase of two lots adjacent to the Library to be used as an open-air reading room, resting place and public playground. It is the intention to add later enough ground to maintain a public tennis court and a swimming pool.

The Playground of the San Joaquin Valley

A County Park in California

TULARE County, one of the richest counties in the state of California, has as one of its greatest assets a county park. Located near the center of population, it consists of one hundred acres of land, over the surface of which are scattered some of the most magnificent specimens of oak trees to be found in the world. These are white oaks, to which the early settlers gave the name "weeping oaks" because of their long cord-like branches.

The idea of a county park had its inception in the minds of some of the broad-visioned pioneers among the Grangers, and was presented by them to the County Board of Supervisors, which finally purchased the land from the Mooney Estate for $1,500. The land was practically a gift, as this sum represented only the value of the timber—hence the name, Mooney County Park.

The county bears the entire expense of maintenance. It makes a certain appropriation each year for that purpose, aggregating $2,300. The Park Superintendent is the County Forester, so that his salary of $100 a month comes from another fund. His home on the park grounds is the park's contribution to his support.

The entrance to the park is marked by a rather imposing figure of horse and rider, called "The Pioneer." This was a gift from the Panama-Pacific Exposition, and cost the county the trifling sum of $865 to demount, ship and remount on its 10-foot cement foundation. From this entrance an automobile road has been built around and thru the park. It passes the enclosures in which are kept ostriches, elk, deer, and the real pioneer, the buffalo.

Well at its farthest extremity is a small artificial lake, thru which are scattered several diminutive islands, some covered with native trees, others with shrubs, pampas grass and flowers. This lake forms a wading and swimming pool for those who desire it. It is also equipped with boats free to the users. In fact, this park is unique in that all of its privileges are free except the use of the dancing pavilion. For this the nominal sum of $5 is charged for the use of the piano, lights, and janitor service. Scattered thru the grounds are dressing-rooms for the bathers, comfort-stations, see-saws, swings, camp stoves, and an abundance of tables and benches for the convenience of picnickers.

The park forms an ideal playground for the whole of San Joaquin Valley, and the attendance, which is increasing each year, testifies to the fact that it is thoroly appreciated. Last season, the average daily attendance was 400.

Massachusetts Towns Subsidize a Street Railway

THE electric railway transportation problem is not confined to the large cities, where there is at present a general tendency and need to increase the fares. In Massachusetts, in 1918, the State Legislature passed a bill authorizing cities and towns to contribute to the cost of the operating and fixed charges of street railway companies.

The trolley situation thruout Massachusetts has been very bad for some time, and this enabling legislation in 1918 was passed after a number of remedies of various types had been laid before the Legislature. The law reads as follows:

Chap. 288

AN ACT TO AUTHORIZE CITIES AND TOWNS TO CONTRIBUTE TO THE COST OF OPERATING AND FIXED CHARGES OF STREET RAILWAY COMPANIES.

Be it enacted, etc., as follows:

Section 1. Any city or town may during the period of the present war and for two years following its termination as defined by federal authority, upon such terms and subject to such restrictions as may from time to time be approved by the Public Service Commission as consistent with the public interest, contribute to the cost of operation and fixed charges within such city or town of any line or lines of a street railway company, to an amount not exceeding one dollar per one thousand dollars of the preceding year's assessed valuation in any town, and not exceeding fifty cents per one thousand dollars of the preceding year's valuation in any city.

Section 2. This act shall take effect upon its passage. (Approved June 1, 1918.)

The Berkshire Street Railroad Company has two suburban lines which run thru Great Barrington, Mass., and the territory is so sparsely populated that, even under most favorable conditions, neither line could possibly be made to more than pay expenses, and under the existing abnormal conditions, the lines mentioned were running behind to such an extent that the street railroad company saw no other alternative than to discontinue them. It was, therefore, necessary for the three towns of Great Barrington, Sheffield and Egremont to take action promptly to avoid the loss of the suburban trolley system.

The enabling legislation of June 1, 1918, made it possible for these towns to protect themselves and provide interurban transportation. The three towns held special town meetings, and unanimous action was taken in each to appropriate the full limit of money allowed by law to assist the Berkshire Street Railroad Company in maintaining its service.

This privilege of subsidizing public service utilities is novel, and, in the present time of exceedingly high prices for materials and high wages for labor, it is one of the wisest provisions which can be made to keep all communities which are important in the agricultural life of the community from being literally blotted off the map thru the lack of ready transportation facilities.

Safe Milk for the Small Town

Tarboro, N. C., Develops Municipal Pasteurization and Delivery

By K. E. Miller
Passed Assistant Surgeon, United States Health Service

IN cities and larger towns, no fundamental difficulties are now encountered in furnishing bacteriologically clean milk. But for economic reasons the advances made in recent years in this field have not been extended to small towns. In such places the amount of milk consumed has been entirely too small to justify the overhead expense necessary for the employment of the usual methods of sanitary control on the part of either the town or the milk producer. In other words, the amount of milk consumed, not the population, indicates the milk problem of the town. For instance, it is understood that in northern towns the daily per capita consumption is about one pint, whereas in the average town in the South it is very much less. A recent careful survey of the milk consumption of Tarboro, N. C., a town with a population of 5,500, was unable to account for more than about 400 quarts per day at the outside. On the basis of consumption for northern towns, it should be about 2,750 quarts, or six times what it actually is.

There are two well-known methods of obtaining a safe milk supply: (1) sanitary control of the production and distribution of the milk, and (2) pasteurization. While ideal conditions demand a combination of both processes, the smaller towns will probably have to rely largely on but one.

As to the former method, nothing short of certified milk will yield a satisfactory degree of safety, and at times even this is the source of a false and dangerous sense of security. The overhead expenses necessary to produce and distribute certified milk are prohibitive for the small town. Not only is the expense beyond all reason for any except large dairies, but the health department would not be able to employ a dairy inspector and secure a bacteriological laboratory, both of which are absolutely essential. It is plain, therefore, that sanitary control of the milk supply cannot meet the problems of the small town.

Pasteurization offers more hope. If a dairyman or a milk concern handles as much as 300 or 400 quarts of milk per da pasteurization of that milk will probably n add more than 2 or 3 cents per quart to t cost. The equipment necessary for efficie pasteurization of 300 quarts of milk at time may be had for about $500. In case central station for receiving, bottlin pasteurizing and distributing the milk is d sired, the entire expense of machinery a delivery facilities will be in the neighbo hood of $1,000.

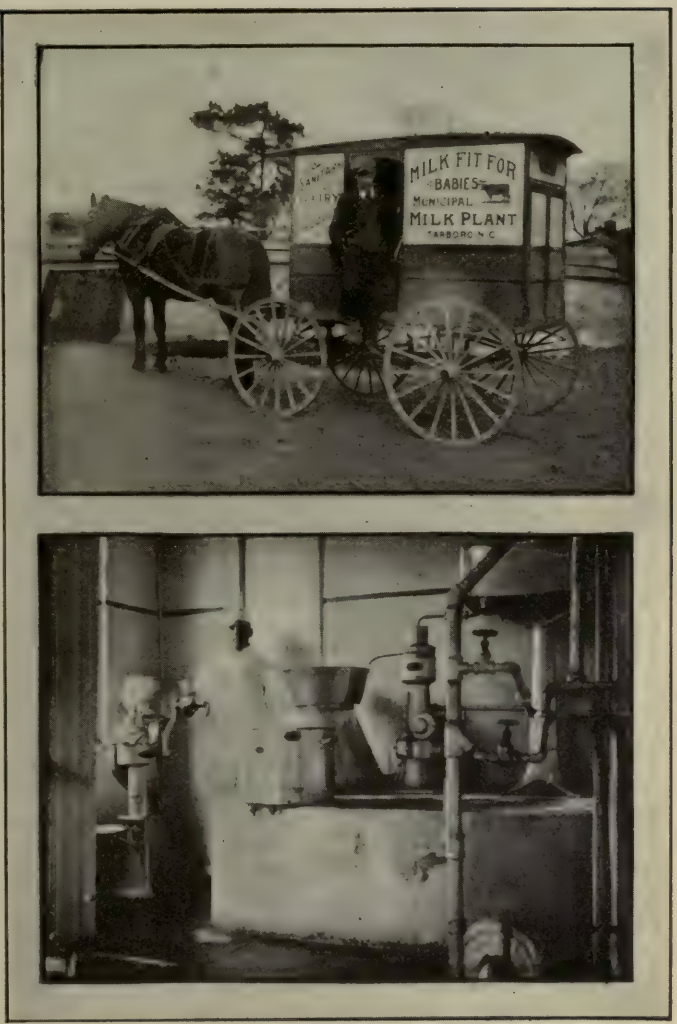
It is obvious, however, that there is limit in the size of the town below whi the operation of any scheme for supplyi safe milk becomes impracticable as a co mercial proposition. As a result of pra tical investigation, the conclusion that safe milk supply is possible for any tow consuming 400 quarts of milk or more p day seems to be reasonable. In addition the hundreds of small towns consuming th amount, there are perhaps as many othe which could or should, as a result of prop ganda leading to a consumption somewh comparable to that considered normal f most northern towns and cities, be in position to have their milk pasteuriz economically.

In the case of these small towns consu ing 300 or 400 quarts of milk per day, will be found that three or more produce contribute to the supply, so that the outp of no one of them is likely to be more tha 199 quarts and that of some may be muc less. Inasmuch as the calculations abo are based on 300 quarts as the minimu which would enable a pasteurizing plant operate economically, some provision mu be made to relieve the producers of t pasteurizing process. A complete answ to this need is found in municipal pasteuri ation. This idea is not a new one at a but the extension of it to the very sma towns which cannot get even reasonab safe milk by any other means is an entire new departure, so far as the writer is awar A practical experiment along these lines

determine the workability of this scheme is now in operation in Tarboro, N. C.

The milk supply of Tarboro does not exceed 400 quarts a day. There are no producers who make dairying anything but a side issue, and there is an annoying number of family cows, the surplus milk from which is dispensed among the neighbors. No part of the milk is produced under conditions above the ordinary from a sanitary point of view. Practically all of the work of operating the dairies is done by ordinary negro labor, virtually without any direct supervision. Nearly all the milk is delivered in bottles, but some is delivered in bulk.

In order to meet these conditions and dispose of them effectually, the Tarboro program was developed by officers of the U. S. Public Health Service. A milk ordinance was passed by the town council, effective October 1, 1918, requiring all milk sold in Tarboro to be pasteurized. The pasteurization is done in a central plant owned and operated by the town. The cost of all machinery necessary for the plant was about $800. The pasteurization plant is installed in a section of the city light and power plant, which gives immediate access to an abundance of steam at all times for operating purposes. It is fortunate also that the light and power plant adjoins the town ice plant, from which can be derived a supply of brine or ice for cooling and refrigeration.



ABOVE—THE DELIVERY WAGON
BELOW—INTERIOR OF PASTEURIZING PLANT

The town does not only the pasteurizing, but the collecting and distributing as well. In other words, the town is in the milk business. The producers deliver the milk to the pasteurizing plant and receive cash for it daily, weekly or monthly as they choose. In order to eliminate bookkeeping and to insure against loss in collection of accounts, the coupon system has been adopted; and no milk is delivered without collecting coupons which have previously been paid for.

The bottle pasteurizer is used in this plant for the following reasons: (1) it is cheaper to install than the bulk pasteurizer in the case of a small plant; (2) it avoids all chance of contamination following pasteurization; and (3) it enables any person who so desires to obtain the milk of his favorite dairyman.

The town is not aiming to make money

out of this undertaking, but to make the proposition self-supporting. The increase in cost due to pasteurization is offset partly by the saving effected from the elimination of one delivery a day, partly by the abolition of overlapping milk routes, and partly by the elimination of loss in collections. But after these savings are effected, some addition to the present cost of milk to the consumer will most likely be required. However, no milk is sold at the present time for more than 12 cents per quart, altho Tarboro's closest neighbors, Rock Mount and Wilson, are paying retail prices of 18 and 20 cents. A price of 15 cents per quart to the consumer in Tarboro, therefore, does not seem unreasonable. Tarboro pays the producer 10 cents per quart for milk delivered at the plant.

Sanitary control measures have not been discarded. On the contrary, these are now regulated more effectually because the town can simply refuse to buy milk not produced under reasonably clean conditions. It is quite possible for the health officer or a committee of business men to determine this fact by periodic inspection of dairies.

The solution of the milk problem for the small towns, therefore, will apparently be established in the future on two principles: (1) efficient pasteurization under municipal operation; and (2) a modified set of sanitary requirements for the farm, which will insure a reasonable degree of common cleanliness.

At the present time only about 175 quarts of milk are received per day at the plant, this being the entire supply of the town. Even with this amount, the plant has show that it is not only self-supporting, but yield a small and certain amount of revenu The total cost thus far for everything ha amounted to $1,267. This figure include all machinery, equipment, and their installa tion, and likewise delivery facilities. Ther are certain other small bills outstandin but these are insignificant.

Milk is purchased from the producers 12 cents per quart now and delivered to th consumers at 17 cents. Disheartening diff culties were met with during the first wee of the operation of the plant. The troub was determined to be improper and insuf cient cooling of the milk before and aft pasteurization. These matters were spee ily adjusted, and perfect operation has bee experienced ever since. Trouble was a ticipated in the radical change from the o system to the new, but satisfaction with th system now seems to be almost universa The only source of anxiety at the prese time is the scarcity of milk. This necess tates an equable distribution so that who want milk will get some, tho their po tion frequently has to be reduced. The fe complaints that are met with are practical all due to the inability to furnish milk the amount desired.

The ordinance passed by Tarboro whi made this municipal pasteurization pla possible and regulates its operation is pu lished in full in the weekly report of t U. S. Public Health Service under date December 13, 1918, and any town desiri to secure this ordinance for considerati should apply for a copy at once.

The Motion Picture as the Successor of the Saloon

The saloon is passing into oblivion. Business, war, food necessities, moral sentiment —all have combined to push it into the grave. But you cannot bury human nature. Human nature will still demand and receive stimulus and relaxation, some of which has been furnished by that passing social institution, the saloon, which has abounded in light, conversation, warmth and independence. Some one amusement or series of pleasures must exist which will absorb the leisure time, the dull periods, the excess energies, the longings for thrills and excitement, and the demands of weary or overburdened minds. The motion picture meets all these requirements. It draws the members of the family. It is dem cratic, inexpensive, accessible to all, a ever changing.

Why not transform the larger saloons your town, keeping the motion picture the first floor, and club rooms for all t people of the neighborhood on the floo above? Why not turn the schools in community centers with the motion pictur as one great basis of attraction? They w attract the whole family as the saloons d not, and will leave in their wake neither d pression nor trouble.

FORWARD STEPS
REPORTED TO THE AMERICAN CITY
BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

For this department the editors will welcome short articles from city, town and county officials and heads of departments, on subjects of interest and pratcical value to others engaged in similar work. Photographs, plans, or other illustrative material, should accompany the articles whenever available.

CITY MANAGERS

Meeting the Citizens' Complaints

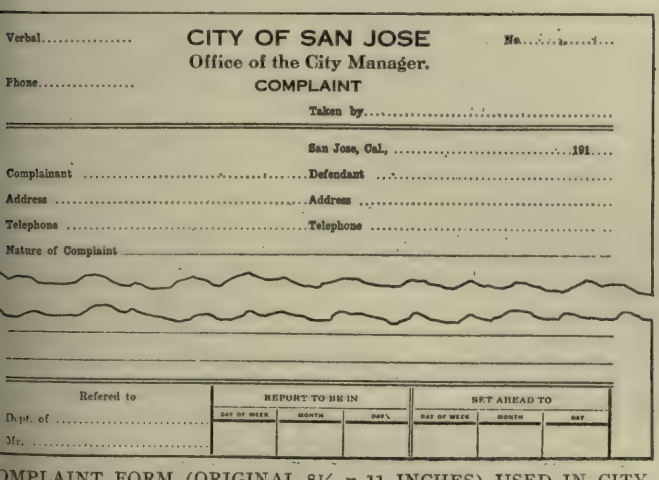
SAN JOSÉ, CAL.—One of the sources of greatest annoyance to the public is the fact that after they have made complaint to the city about conditions, they never receive any direct reply as to what has been done in the matter.

Under the city manager plan in San José the city manager has charge of all departments, and hence complaints should be made directly to him. To handle this situation a special report blank has been prepared so that complaints may be registered and reports of the complainants handed to the City Manager. This enables the Manager to report directly to the complainant. When the complainant completely understands the details of the situation, he often changes his views considerably, and by placing himself in the position of the offender becomes ready to adapt himself to the condition, and the city moves on more smoothly.

There are many complaints which should go and do go directly to the Health Department and to the Street Department, but in all cases the employes are instructed to meet directly with the complainant, so that he knows that action has been taken, and taken promptly.

We feel that the central complaint bureau in the City Manager's office is the right place for any citizen who feels aggrieved to make his complaint, and time is not too valuable to take care of even the most trivial trouble. Our stockholders (the citizens) have a right to expect courteous and prompt response from their Manager.

W. C. BAILEY,
City Manager.



Verbal.....
Phone.....

CITY OF SAN JOSE
Office of the City Manager.
COMPLAINT

No.....

Taken by.....

San Jose, Cal., ...191....

Complainant .....Defendant .....
Address .....Address .....
Telephone .....Telephone .....
Nature of Complaint .....

Refered to
Dept. of .....
Mr. .....

REPORT TO BE IN			SET AHEAD TO		
DAY OF WEEK	MONTH	DAY	DAY OF WEEK	MONTH	DAY

COMPLAINT FORM (ORIGINAL 8½ x 11 INCHES) USED IN CITY MANAGER'S OFFICE, SAN JOSÉ, CAL.

Daily Auto Records Lead to Economy

WALTHAM, MASS.—A scheme for scoring municipal automobiles in Waltham has been devised thru the use of a record card on which specified data relative to mileage, fuel consumption, tires, tubes and vulcanizing are recorded. These cards are filled out daily by the chauffeurs on the various machines and filed at the end of the month with the purchasing agent. A copy of the card is shown on page 448. Another similar form is used to keep detailed information concerning tires and other general

Driver's Name_____ CITY OF WALTHAM, MASS. Month_____

Car_____ MOTOR VEHICLE REPORTS Department_____

DATE	Speed. Read. First Taken Out	Speed. Read. Last Put Up	Mileage For Day	GASOLINE	KEROSENE	OIL	ALCOHOL	Speed. Read. After Filling With Gas	TIRES	TUBES	VULC.	Hrs. Labor Repairing at Garage or General Remarks
1												
2												
14												
15												
16												

Keep a record of YOUR car DAILY on this card (OVER) Turn card in to MANAGER'S OFFICE on 1st day of next month

Fm. 16-1500-10-18

MOTOR VEHICLE REPORT FORM DEVISED BY CITY MANAGER'S OFFICE, WALTHAM, MA

expenses. In each issue of the monthly municipal bulletin the average scores for the previous months are published, showing the standing of the different departments, their cars, the miles per gallon of gasoline, and the miles per quart of oil. A summary for the five months ending February 28 is as follows:

AUTOMOBILE SCORES AVERAGED FOR PAST FIVE MONTHS

Standing	Department	Car	Miles, Gal. Gas	Miles, Qt. Oil
1	Wires	Oakland	15.60	94
2	Street	Ford Tour.	13.64	82
3	Water	Ford Tour.	13.26	55
4	Cemetery	Oakland	12.94	156
5	Welfare	Oakland	12.15	99
6	Buildings	Ford Tour.	12.14	114
7	Forestry	Ford Rdstr.	11.30	111
8	Forestry	Ford Truck	10.22	83
9	Street	Metz	9.68	48
10	Fire	Nash	8.60	97
11	Wires	Metz	8.30	54
12	Police	Case	7.28	71
13	Street	Stearns Kn.	6.61	40
14	Wires	Republic	6.33	144
15	Street	Autocar 2	6.00	17
16	Street	Autocar 3	5.81	18
17	Police	G. M. C.	4.00	29
18	Street	Kelly-Spring.	3.10	5

Fire apparatus not included in contest.

Some competition has been worked up between the different departments and the different chauffeurs as to the economical operation of their various machines. This has been a wholesome competition and has resulted in considerable saving to the city.

C. A. BINGHAM,
City Manager.

FINANCE DEPARTMENTS

Metered Street Lighting

Dallas, Tex.—In 1917 the city of Dallas paid $52 a year for each street light, and almost every night several lights were reported not burning. Those which were ported out by the police were not paid by the city, but the police could not ke record of all the lights that failed to b Some of the lights were out of order sev nights before the city was notified.

It was decided that the only proper economical way to contract for street li ing would be by the installation of mo lights which would produce about twice illumination of the ones then in use, cost of about one-half; the current w be metered to the city by the lighting c pany, so that the city would pay only fo amount of current consumed. Our p were to double the number of lights in use; nevertheless, the cost of opera was figured to be even smaller than u the old system. At that time the st lighting was costing the city of Dallas a $100,000 a year.

In the propaganda to educate the pe to the need of this new lighting sys great stress was laid on the advantage sufficiently lighted streets to the police partment because criminals do not gene operate in illuminated districts. About half of the robberies and other crimes committed in unlighted alleys or corners.

Considerable trouble was experience completing the contract for the new ligh system with the Dallas Electric Light Power Company, but after many con ences the contract has been mutu agreed upon by the contracting parties a period of eight years. Under the term this covenant, the lighting company wil stall the most modern type of lamp. U the present time fifteen hundred of t

amps have been installed, and the governnent is much pleased with their efficiency.

The new type of lamp selected varies rom three hundred to six hundred kilovatts and burns on an all-night schedule. The average price the city will pay per lamp s $37 per year, and twenty-five hundred of nese lamps will be installed thru the city. This very nearly doubles the number of amps used by the city at the present time, ther than the ornamental lamps now in se on Main, Elm and Commerce Streets.

When the installation of the new lamps is ompleted, Dallas will probably be one of ne best illuminated cities in the Southwest.

WILLIAM DORAN,
Commissioner of Finance and Revenue.

CITY ENGINEERS

Schenectady Electrically Welcomes Returning Soldiers

SCHENECTADY, N. Y.—When the city of chenectady began to consider what parcular means should be used to visualize its elcome to the men returning home from e camps in this country nd from overseas serce, the authorities deded that a large elecic sign placed in a conicuous position would far superior to any iumphal arch or other mporary decorative ork.

This sign, shown in e accompanying photoaph, is 27 feet in diamer, and the lower edge about 15 feet above e ground. It is erected three poles and is ilt of matched flooring on a background sufiently strong to hold it mly. The letters are inches in height, with rcles both inside and tside of the letters, in d. The sunburst is ight yellow, and the g is shown in its true colors. The background of the letter and the sunburst is blue, the letters are yellow, all being set in electric lights, which number over 1,600 for the entire sign. The lights in the flag are upon a flasher, giving a waving effect, while all the other lights are stationary. The sign lights up the street at night for a considerable distance.

This sign is so designed and constructed that it is not only very pleasing at night when illuminated, but presents a most attractive appearance also in the day-time. It was designed for the city by W. D'A. Ryan, Director of the Illuminating Engineering Laboratory of the General Electric Company, with Captain Gosling as his assistant. The sign was constructed and paid for by the city, and was erected under the direction of the Commissioner of Public Works, at a cost of approximately $3,000. The current for operating it was donated by the Schenectady Illuminating Company as a contribution to welcoming the returning soldiers, sailors and marines. The sign will probably be lighted for fully six months longer, until all the Schenectady soldiers have returned home.

LOUIS B. SEBRING,
City Engineer.



ELECTRIC SIGN BUILT BY THE CITY OF SCHENECTADY TO WELCOME HER RETURNING SONS

PUBLIC WORKS DEPARTMENTS

A Unique Refuse Burner

Braddock, Pa.—A short time ago it became apparent that some type of refuse burner was necessary in Braddock to dispose of combustible refuse, such as street sweepings and house rubbish which had no sale value. At the time funds were not available to build any type of standard incinerator, so the Department of Public Works designed and constructed the incinerator illustrated in the accompanying photograph.

This destructor consists of a brick furnace measuring 6 x 8 x 5 feet and is connected to the 75-foot stack of the portion of the old water-works plant formerly used by the steam-driven equipment now held in reserve. This equipment has been replaced by modern plunger pumps operated by 300-H. P., 2,200-volt, 60-cycle Westinghouse electric motors, running at a speed of 585 revolutions per minute. The actual construction costs of the incinerator were only $600, and it has proved a perfect boon to the department.

Merchants from all parts of the city now haul refuse to the plant and dump it. A single attendant takes care of the furnace and rapidly disposes of all rubbish brou to the plant. Besides being a great venience to the community, it saves the pense of men and teams that would be quired to haul street sweepings a long tance to the dump.

W. H. WILLIAMS
Director, Department of Public Wor



INCINERATOR BUILT BY THE DEPARTMENT OF PUBLIC WORKS, BRADDOCK, PA.

A Street Cleaning System Re organized

Detroit, Mich.—After consider study on the part of the Department Public Works, the system of street cle ing in Detroit has been reorganized. stead of the old scheme by which the was divided into twenty-one ward distri the city has been divided into four com street-cleaning sections, as shown on accompanying map.

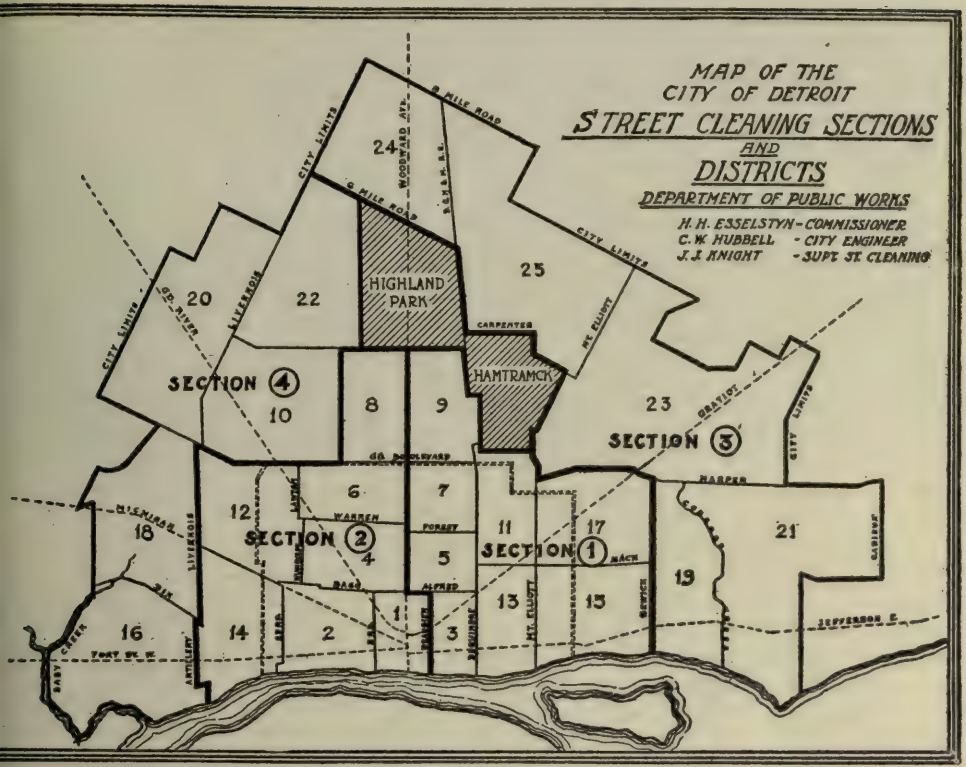
Each one of these new districts ha section superintendent, thus making responsible heads instead of the forty-th foremen who were formerly emplo These four superintendents now re directly to the Superintendent of St Cleaning and Sanitation. Each sectio divided into from five to eight districts cording to the size of the section and nature of the streets to be cleaned. E district has a foreman responsible to section superintendent.

The organization has the following vantages:

1. The abolition appropriation by aw means that the ac need for clean streets in any partic section will be use a basis for spen money, instead of political need of district.

2. The responsib for cleaning th streets will be cent ized in the four sec superintendents, stead of being scatt among forty-three f men as before.

3. The cost and q ity of work done the sections and tricts can be more ea



asured, computed and compared than the st and quality of work done by the former rd divisions.

4. It has been found already that more ective work will result, because each reman will be able to specialize in the rticular need of his district. Under the ward organization plan, a foreman read his activities over every phase of eet cleaning required in the entire ward, nging from problems of intense traffic in usiness district to almost rural conditions the outlying sections.

Under the present organization, clean eets are largely a matter of spending ectively the $1,500,000 which is con- buted annually by the citizens for this rpose. It is believed that a great forward p has been taken thru this reorganiza- n of the street cleaning department.

H. H. ESSELSTYN,
Commissioner, Department of Public Works.

✣ ✣

oduce Market Proves Successful

BRADFORD, PA.—The produce market in- tuted in the summer of 1918 thru the operation of the Bradford city authorities and the Board of Commerce has proved its value beyond question. The city provided the land and the ordinance under which the market is operated. The promoting was largely done by the Board of Commerce. Twelve producers were on hand when the market opened on August 10, but as the undertaking rapidly became more popular, additional producers arrived until they filled all the available space. At no time was there any lack of buyers for usable produce offered at reasonable prices. The buying public proved themselves good judges of values, and the farmers who came late or set a high price until the peak of the crowd had gone and then tried to unload at lower prices usually failed. Butter, eggs and poultry were always in great demand and sold out quickly. Farmers came from considerable distances and were enthusiastic about the market. They believe that the curb market saves the time of the producer, besides enabling consumers to secure produce early in the day while it is still in fine condition. Equally important, however, is the fact that the curb market brings consumer and producer into personal contact



A BUSY MORNING AT THE OPEN AIR PUBLIC MARKET, BRADFORD, PA.

and that the producer is able to gauge the wants of the consumer and plan accordingly.

The question of hours naturally furnished some basis for discussion, but the average load was sold out before closing time. The market opened at 8:00 A. M., enabling the producer to arrive for the opening, dispose of his produce and reach home in time for dinner and an afternoon's work on the farm. This coöperation between farmer and consumer is of considerable benefit in promoting a community spirit. Add the material, tangible benefit to both in the way of business and low prices, and one will readily understand why the citizens of Bradford are enthusiastic about their market.

W. L. CURRIE,
Commissioner of Parks and Public Property.

HIGHWAY DEPARTMENTS

Patriotic Lamp Post Decorations

EAU CLAIRE, WIS.—The decorations shown on the lamp post in the accompanying photograph were placed under instructions from the City Council of Eau Claire. The shield is made of sheet iron with wooden braces at the back, and is fastened to the post with wire. It is painted with the national colors and has six perforations each in which small flags are placed on special occasions. The flags are rem after each such occasion and stored fo next demand. The shields, however, permanent decorations.

F. C. GRUBE
Superintendent of Str



DRESSED UP FOR ANY PATRIOTIC OCCA
EAU CLAIRE, WIS.

PARK DEPARTMENTS

A Municipal Natatorium for Des Moines, Iowa

DES MOINES, IOWA.—Des Moines has a amous river-front civic center. After suf-ering for years from billboards, manure iles, rubbish heaps, débris and filth, the 'own Planning Committee some twelve ears ago began an aggressive campaign, nd as a result the banks of the river have een thoroly cleaned up and improved. 'hru the influence of the Committee and ie hearty coöperation of the City Council, ie river is now confined between concrete 'alls, the parkings have been landscaped, nd a number of public buildings have been rected fronting the river.

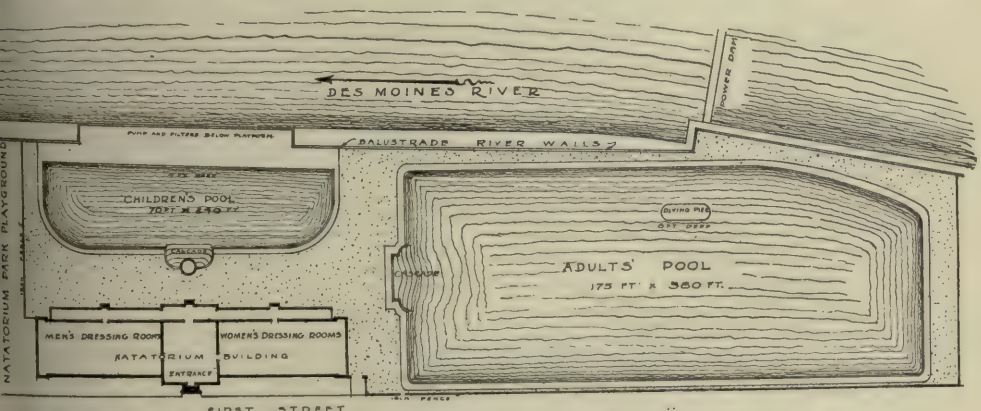
The City Hall, Coliseum, Post Office, Iunicipal Court House, electric light plant, nd Public Library building have been rected; the Government has just con-emned one of the two blocks for the pur-ose of erecting a new Federal Court build-ig, and the one remaining block is to be aken soon for a new memorial art gallery. 'lans have also been completed for the new atatorium. All these buildings will occupy space of five city blocks on each side of ie river.

A concrete power dam was built in 1918 t the upper end of the civic center, and a -foot "beauty dam" is to be built at the ower end as a part of the natatorium con-ract; this will keep the water at a constant evel thru the civic center, thus forming a quiet lagoon some 700 feet wide and 2,000 feet long, flanked by balustraded concrete walls, parkings and public buildings, and crossed by five new concrete bridges. The civic center is rapidly nearing completion, and even now presents a beauty spot of distinction.

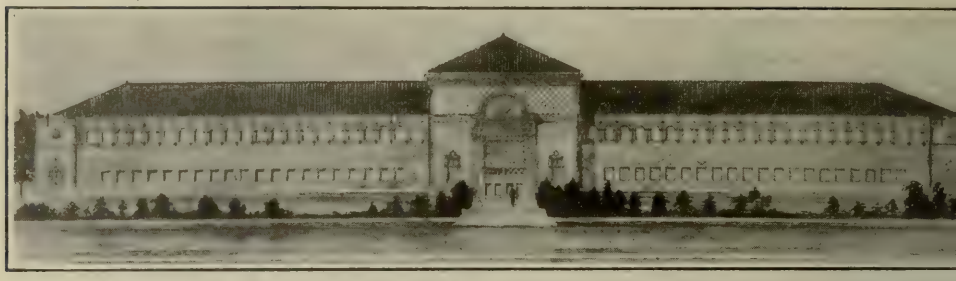
At the suggestion of the Commissioner of Parks and Public Property, complete plans for the natatorium were prepared in 1918, but just prior to the time of letting the contracts the War Department put a stop to all public building projects. In all probability the plant will be constructed during the coming year, so as to be ready for the season of 1920.

The Commissioner, his assistant, and the architect visited a number of cities where outdoor pools had been popular, to study conditions. The site selected for the Des Moines natatorium is a plot of ground about 500 feet north of the new City Hall. This space is to be parked and made into a small playground. Concrete walls will confine the banks to a level of about 17 feet above low-water mark, and here will be erected the building and pools.

The building will be of brick trimmed with polychrome terra cotta, with a tile roof, and will be of permanent reinforced concrete construction 60 by 240 feet. It will contain a service room in the central part. On either side thru two stories will be the dressing-rooms for men and women, also a hair-drying room for the women and a barber shop for the men. Toilets, showers, heating plant, laundry, emergency hospital room, and all such minor appointments will go to make it as complete as possible. Upstairs in the central portion will be a



PLAN OF THE DES MOINES NEW OUTDOOR NATATORIUM, SOON TO BE ERECTED



FRONT ELEVATION OF NATATORIUM TO BE CONSTRUCTED THIS SEASON AT DES MOINE IOWA

room 45 feet by 75 feet, with a 20-foot ceiling, which is arranged to be used as a gymnasium or assembly room.

As this is a summer natatorium, the pools are out-of-doors,—one for the children, 70 feet by 240 feet, and one for adults, 175 feet by 380 feet. The small one runs from 6 inches to 4 feet deep and the large one from 6 inches to 8 feet. In the deep part of the large pool will be built a large diving pier with spring boards at 3 feet and 12 feet above the water. These pools are to be of reinforced concrete.

The combined capacity will be about 2,400,000 gallons of water, which is to be pumped direct from the river by a large electric centrifugal pump and forced thru a battery of filters and purifying apparatus. This will provide clean water, treated with chlorine so as to obviate any danger of contamination. The water entering the pools will flow over two cascades made of a series of concrete steps hollowed out in the form of long shallow basins, and in playing over these will be thoroly aerated. It will take about 36 hours to make initial fill. The system is so arranged the water from the pools will be re-ci lated thru the filters and purifying paratus, thus giving a constant change water. The cascade will be in opera several hours each day. By-passes are ranged for washing out the filters, and course, for completely emptying the po No attempt will be made to heat the wa as this would be too expensive an op tion; exposure to the sun will keep water at a comfortable degree even the late fall. The interior and exterior be thoroly lighted with electricity.

The total cost of the entire plant, inclu some river walls, will be about $250,000 will provide facilities for 1,200 to 1 people every hour. It is proposed to each sex alternate hours during the day to open the pool to both during the even

Having a separate pool for the chil enables the management to provide fo ages at the same time and with the s attendants.

HARRY B. FRASE
Park Commissio

Thrift Stamps for Junk

Thruout the country the Salvage Bureau of the Treasury Department and the Waste Reclamation Service of the Department of Commerce are coöperating with local organizations. In Boston, Mass., cards with "Salvage" on them are given to each householder and every store, to display when there is junk to sell for thrift stamps, and in this way a junk collector is summoned to the house. A schedule of approximate prices which junk men will pay to housewives for different materials is given to householders, so that they may know what they should receive for waste on hand

It is not only the householder who help in this great movement. In one s community, eighty tons of book stock p was salvaged in one week, and a bank i adjoining city returned to the mill n twenty-five tons of old books and w paper that had accumulated during the ceding twenty-five years. This not brought a money return to the bank pe but turned into the channels of industry terial to be made into other kinds of boo paper that will be useful to the nation.

Efficiency of Bituminous Surfaces and Pavements Under Motor Truck Traffic

By Prèvost Hubbard
Chemical Engineer, U. S. Bureau of Public Roads

THE title of this paper covers a subject upon which a great deal of thought has been spent by progressive highway engineers in relation to pre-war traffic onditions and to the prospective normal development of traffic. Many engineers had, least in their own minds, classified the arious types of pavements with relation to eir efficiency under the ordinary variaons in traffic encountered on county, state nd municipal highways, and their ideas ere fairly well fixed on the subject, as idenced by more or less consistent prace in their choice of types when reconruction or new construction became necesry. Just where the dividing line should drawn, so far as traffic is concerned, beveen different types of pavements has alays been a matter of individual opinion, t in general, with increases in volume and eight of traffic, the increasing efficiency of e bituminous types has been rated as llows:

1. Bituminous surfaces
2. Bituminous macadam
3. Bituminous concrete
4. Sheet asphalt and asphalt block

Suddenly and with little opportunity for nticipation, a very large mileage of our nportant state highways and many of our cal county and municipal pavements were bjected to a tremendous increase in traf. The increase was not only in volume, hich would have presented a comparavely simple problem to solve, but in the eight and load-carrying capacity of the dividual vehicle. This increase, coupled ith an unusually severe winter and imediately followed by war restrictions upon e use of many road materials, with labor nortage, excessive costs, and loss of memrs of highway engineering organizations, reated a situation during the year 1918 hich was abnormally serious and complited. With comparatively few exceptions, ew construction ceased and maintenance as so handicapped as to become inadeuate.

Recent Road Failures

Hundreds of miles of roads failed under the heavy motor truck traffic, within a comparatively few weeks or months. Roads with bituminous surfaces, bituminous macadam roads and bituminous concrete roads all failed alike, together with other types used in state and county work. These failures were not only sudden but complete, and almost over night an excellent surface might become impassable. Such rapid and complete failures in municipal pavements were of less common occurrence, and as sheet asphalt and asphalt block have always been largely confined to municipal work, failures of these types have not been noted to the same extent as failures of the other types mentioned.

In the haste and confusion of war activities little opportunity has existed for a systematic and comprehensive study of the problem suddenly thrust upon highway engineers. Reports from all parts of the country have, however, established one outstanding fact which has a most important bearing upon any consideration of the efficiency of bituminous surfaces and bituminous pavements: a very large proportion of the failures have been characterized by an almost simultaneous destruction of the entire road structure, and not merely the disintegration of the wearing course or pavement proper. No type of pavement will be efficient unless provided with a foundation which will hold up the pavement until it is worn out. When, therefore, the entire structure fails suddenly, inadequate subgrade or foundation conditions are primarily responsible and but little basis exists for placing an efficiency valuation upon the wearing course.

The Foundation

Inevitably coupled with subgrade and drainage conditions, foundation failures occurring as previously described may be due to one of two causes: lack of thickness; or inability of the foundation structure to sus-

tain the loads without appreciable internal movement. So far as bituminous surfaces or bituminous pavements are concerned, remedy of the first cause does not affect the general type of construction. If, however, present heavy motor truck traffic is to continue and possibly increase in weight as well as volume, the second cause may have a direct bearing upon possible modifications in design and in the ultimate determination of the efficiency of certain classes of bituminous work.

Most subgrades have a much lower carrying capacity in the spring than at other periods of the year. As there is practically no slab effect produced by the structure of a broken stone or gravel foundation, a load applied to any overlying bituminous surface is transmitted quite directly to the subgrade. In other words, the intensity of load under its point of application is relatively high thruout the foundation thickness. Under heavy motor truck traffic the intensity of load transmitted thru a 2-inch thickness of dense bituminous concrete to the foundation may be so great as to cause an internal movement sufficient to produce disintegration of the pavement. This is particularly true when the subgrade is of a soft or clayey nature, and appears to be quite possible irrespective of any economical thickness of broken stone or gravel foundation which may be used. In general, the experience on heavily traveled city streets has demonstrated the necessity of a slab foundation for any wearing course, and there appears to be no reason why such experience should not serve as a guide for new construction of bituminous pavements on state and county highways subjected to modern heavy truck traffic. On these highways the traffic has certainly been as severe as on many city business streets, so far as weight of unit loads is concerned, and more severe when the high speed often attained by such traffic is considered.

Means of Preserving Gravel Roads

With respect to existing gravel and macadam roads, whether or not they have been previously surface treated with bituminous material, it would seem far safer at the present time to attempt to preserve such roads under heavy motor truck traffic by means of surface treatment with bituminous materials rather than to utilize them as foundations for the construction of ne bituminous macadam or bituminous co crete pavements. In other words, for t time being such treatments may prove mo efficient than the use of a higher type pavement placed upon the existing roa altho it is clearly recognized that und heavy motor truck traffic the bitumino pavements are more efficient, providing t foundation is adequate to support the loa

Under the same conditions of traffic, bit minous surfaces are most efficient in loca ties where frost action is either absent not severe. Such treatments used in co nection with gravel roads adjacent to arn cantonments in the far South have giv reasonable satisfaction even under hea motor truck traffic. North of the frost lir and particularly in connection with t treatment of clayey gravel roads which b come soft during the spring months, bit minous surfaces are apt to completely di appear. If, however, the gravel road maintained by dragging and at the end the thawing-out period is reshaped, thoro compacted and again treated with bi minous material, it may be kept in a reaso ably satisfactory condition. Under ve heavy motor truck traffic, however, maint nance costs may be extremely high, so th if a continuation of such traffic is to be e pected, the construction of a new road m be necessary. Thus, during a period of 1 days on a clayey gravel road leading fro Alexandria to Camp Humphreys, Virgini which was subjected to an average dai traffic of some 230 heavy motor trucks, t cost for maintenance amounted to appro imately $10,000 per mile. Because of th enormous expense, the construction of new type of road became necessary.

In connection with this road it is of i terest to note that prior to its maintenan as a gravel road it had served as a six-in foundation for a dense bituminous concre pavement two inches thick. This paveme had successfully passed a year of ordina country and pleasure traffic, carrying a lar number of touring cars between Washin ton and Mt. Vernon. In the spring of 191 it was suddenly subjected to an avera traffic of over 200 heavy motor trucks a da and within a comparatively few weeks w absolutely ruined, on account of failure the foundation during the thawing-o period. An extension of this road in t

y of Alexandria consists of a number of ctions of very carefully constructed bitu- nous macadam laid some years ago upon concrete base. Altho subjected to the ne heavy traffic, the bituminous macadam, dinarily considered less efficient than bitu- nous concrete, did not fail except in a w places where failure of the concrete se could be held responsible, owing to ceptionally poor subgrade conditions.

Bituminous Surfaces on Macadam Roads

Bituminous surfaces on properly con- ucted macadam roads subjected to heavy otor truck traffic may, as a rule, be main- ned in localities north of the frost line th less expense and better results than on avel roads under the same conditions. ch surfaces, under heavy motor truck affic, cannot be considered as economical om the ordinary standpoint, but may prove e most efficient temporary method of pre- rving the existing road until money is ailable for reconstruction. It is believed, wever, that under these conditions bitu- nous surfaces will not even prove efficient less constantly maintained by a patrol stem operating thruout the year.

Maintenance by the Bureau of Public oads of experimental bituminous surfaces the Rockville Pike, Maryland, which is macadam road, has demonstrated that ch surfaces constructed with suitable tar d oil products are efficient under reason- ly heavy traffic, provided the patrol sys- n of maintenance is followed. If such a stem had not been in use during the past ar, when from 28 traffic counts an average 135 motor drays, 816 motor pleasure hicles, and 61 horse-drawn vehicles per y passed over the road, it would from all dications have been completely destroyed. With regard to the efficiency of bitu- nous macadam under heavy motor truck affic, there are a number of points to be nsidered. In general, bituminous acadam has not been thought to be effi- ent for such traffic, but, on the other nd, it has almost invariably been placed on a broken stone or gravel base. Re- lts obtained in the city of Alexandria, hich have previously been mentioned, in- cate that if properly constructed and laid on a concrete base, the bituminous acadam may prove quite satisfactory.

Aside from character of foundation, it is believed that sufficient attention has not in general been paid to the important details of bituminous macadam construction, so as to obtain best results. Too frequently the coarse stone is not sufficiently compacted before the first application of bituminous material is made, and later uniform compaction is extremely difficult, if not impossible, to secure. Rutting the road with certain types of distributors just prior to application of the material is a common cause of lack of uniformity in compaction, and a strong tendency to distribute faster than the road can be satisfactorily compacted and finished by a single roller is another. The best results from this type of road which have come under the writer's notice have been secured by the hand-pouring method, altho this method is considered antiquated by many engineers. Where the first application upon the thoroly compacted coarse stone is made diagonally across the center line of the road and the second pouring or seal coat is made in a direction diagonally across the first, with proper attention to uniformity of distribution it is possible to secure a very excellent pavement, as has been repeatedly demonstrated by E. C. Dunn, City Engineer of Alexandria, Va.

The efficiency of bituminous concrete, sheet asphalt and asphalt block pavements under city traffic is so well understood as to require little comment in this paper. If laid upon suitable concrete foundations, there is no reason to suppose that the results given by these pavements in city construction will not be duplicated on county and state highways subjected to heavy motor truck traffic. If the foundation is inadequate to support the load, the pavement is bound to fail, but, as previously pointed out, failure cannot then be considered a measure of efficiency of the pavement proper.

With regard to materials of construction, a few comments may not be out of place, as the efficiency of a bituminous surface or bituminous pavement depends not only upon its method of construction but upon the materials of which it is composed.

Character of the Bituminous Carpet

In general, the author's observation and experience has been that the most efficient bituminous carpets are constructed with the heaviest grade of bituminous material which

it is possible to apply and make adhere uniformly to the road surface. For cold surface treatment this will demand either a cut-back asphalt, a heavy asphaltic oil with specific viscosity of 80 to 120 at 25 degrees C. containing an appreciable amount of volatile material that will evaporate after application and leave practically an asphalt mat residue, or the most viscous refined tar product that can be applied cold. For the latter a specific viscosity as high as 25 to 35 at 40 degrees C. should be used if climatic conditions will permit. While on old macadam it is advisable to keep the thickness of carpet under ½-inch, on certain types of soft gravel it may be of greater thickness provided a hard and tough coarse aggregate cover of sufficient size to force into the old gravel surface by rolling is used. For clay-gravel or sand-clay-gravel roads north of the frost line it is believed that for maintenance under heavy truck traffic light superficial treatment with bituminous materials applied cold will prove more efficient than the construction of a bituminous carpet, altho neither will be adequate to carry the road thru winter.

Bituminous Macadam and Concrete

With regard to bituminous macadam and coarse aggregate bituminous concrete, there is little to suggest in connection with the grades of bituminous materials ordinarily used. It is believed, however, that even in the northern United States the use of an asphalt cement softer than 120 penetration or a refined tar of less than 120 seconds float test at 50 degrees C. for bituminous macadam is inadvisable if modern heavy motor traffic is to be sustained. It is also believed that more attention should be given to specifying and securing a uniform size, and grading within reasonable limits, of coarse stone for bituminous macadam in order to promote uniformity in the penetration of the bituminous material as it is applied and to produce a surface that will wear as uniformly as possible. Such specifications should be based upon tests made with laboratory screens, and should at least cover the permissible percentage retained on the maximum and passing the minimum diameter of screens selected, as well as the percentage limits required to pass or be retained upon an intermediate screen.

Sheet Asphalt

In connection with sheet asphalt and the fine aggregate bituminous concretes, t tendency to use harder grades of aspha cement than heretofore used may prove a visable for very heavy traffic conditio It is quite possible, however, that bett results may be secured by a reduction in t compacted thickness of such pavemen with a corresponding increase in thickne of binder course where one is common used. For fine aggregate bituminous co cretes which are commonly laid without binder course, the introduction of such course not less than 1½ inches thick ma prove advisable, with a reduction in thic ness of wearing course to not more tha 1½ inches. Provided the binder course properly constructed, such practice shou tend to produce a pavement less susceptib to displacement under heavy motor truc traffic. In any event, it is believed that ev more attention should be paid to aggrega grading than heretofore in order to produ most satisfactory results in this type construction.

Resistance to Displacement

The resistance to displacement of com pacted bituminous aggregates, containi particles from one half-inch in diamet down and consisting largely of sand, mainly dependent upon grading of the mi eral aggregate and hardness of the bit minous cement. When, however, the pa ticles become very small and possess a sorptive or colloidal properties, neith grading nor consistency of the cementi medium is such an important consideratio Very large surface contact and high fri tional resistance then become the prin factors. Thus, a fine mastic composed limestone dust or clay and a very soft a phalt cement may exhibit even greater r sistance to displacement than a graded sa aggregate mixed with a much harder a phalt cement. The former type is e emplified by certain finely pulverized bit minous limestones. Use of the latter h but recently passed the experimental stag It is quite possible, however, that futu developments will establish such extreme fine bituminous aggregates as being high efficient under heavy motor truck traffic f both the sheet and block type of constru tion.

Acknowledgment.—From a paper presented at t 16th Annual Convention of the American Ro Builders' Association.

Some Practical Uses of Rainfall Records

A Clear Argument for Establishing Many More Rain-Gauge Stations in the United States

By L. M. Hastings
City Engineer, Cambridge, Mass.

IF a careful study of the streams and watercourses of this country is to be made with a view to their more complete development as a source of power, in order to conserve the consumption of coal as a power producer, the establishment of numerous rain-gauges in various parts of the country will be found exceedingly useful in the study of that important question. This will also aid in the development and conservation of our streams as sources of domestic water supplies.

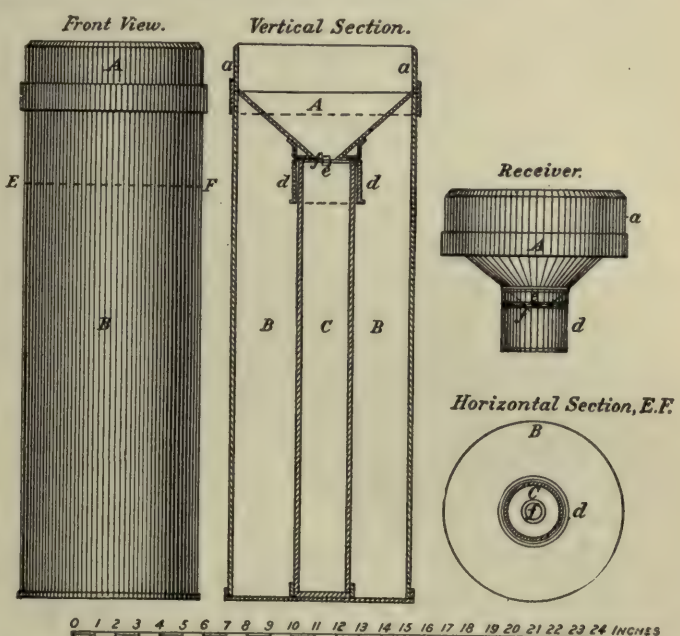
Advantages in Proximity of Gauge Stations

One advantage to be gained by having gauging stations located at relatively short distances apart would be to check the results obtained at other stations and correct any variation which may appear in the gauging due to special or unusual topographical conditions in the watershed, such as elevation, nearness to large hills, mountains, or water surfaces, and the direction of prevailing winds. As the amount of rain which may be expected to fall on a given district is often the only basis upon which its value as a power or water producer can be formed, it follows that it is desirable to have the very best data that it is possible to obtain on that vital point.

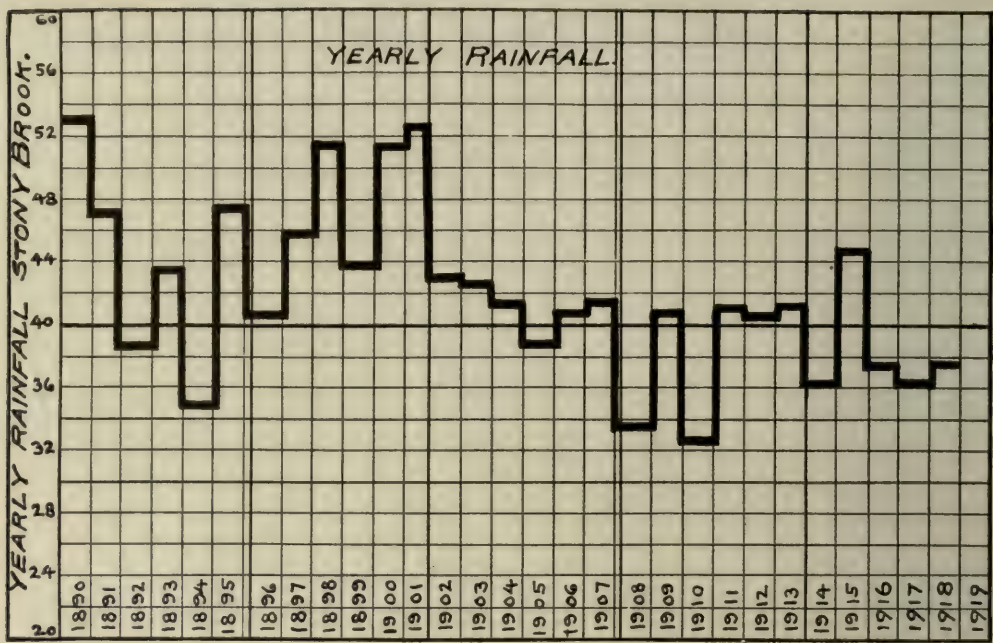
It may be, tho, that with so many rain-gauges already set up, especially in eastern New England, it would be easy to obtain accurate and reliable data from almost any location in that section; but anyone not familiar with the subject will be surprised and puzzled at the wide variation in the results obtained at locations not far apart, which often renders any close estimates impossible. The following table has been prepared showing the average rainfall at various stations for a forty-year period ending 1913, and also the rainfall for the exceptionally dry years of 1880 and 1883, which for some purposes it might be desired to use:

Location	Average Yearly Rainfall, 1874-1913—40 Yrs.	Rainfall for Year 1880	Rainfall for Year 1883
Manchester, N. H.	38.27	27.30	31.47
Concord, N. H.	38.63	30.48	31.35
Lowell	42.01	35.28	39.84
Waltham	43.36	31.73	29.32
Cambridge, Harvard College.	43.49	35.22	32.65
Framingham, Sudbury River.	44.26	37.87	31.95
New Bedford	46.65	40.06	43.51
Providence, R. I.	47.20	41.29	39.54

Manchester, N. H., and Providence, R. I., are about 80 miles apart in a straight line



TYPICAL RAIN-GAUGE FURNISHED TO LOCAL COÖPERATING OBSERVERS BY U. S. WEATHER BUREAU



From the table it will be seen that even for a long-term period the average amount of rainfall at the points named varies greatly, the extreme variation being 8.93 inches or about 23 per cent, while for the dry years of 1880 the extreme variation is 13.99 inches, or over 50 per cent. It is evident that anyone attempting to design a water-power or a water-supply system for a watershed at all remote from a long-established rain-gauge must unavoidably make his estimates upon data which have a large element of uncertainty in the make-up.

It has been stated by some writers that a rainfall record of from thirty-five to forty years makes that record fairly reliable as a basis of estimates for the expected average yield of a watershed. While this may be true in an ordinary period, an examination of the rainfall records of the last forty years of the Sudbury River, Mass., watershed, and others which have commonly been used in New England, shows that a marked change in the amount of rainfall has occurred during the last fifteen years of that period, and that while the average for the forty-four years since the Sudbury River records were begun is 44.66 inches, the average for the period 1904 to 1918 (fifteen years) is only 40.97 inches.

The Stony Brook, Mass., rainfall record of the Cambridge Water Works in Waltham, Mass., shows a similar change. While the average rainfall for the entire period of twenty-nine years since the gauge was established (1890 to 1918) is 41.53 inches, the average for the period 1904 to 1918 (fifteen years) is 38.75 inches.

Still further, the record of the yield or run-off for both these areas shows a corresponding persistent decrease. If these records are analyzed by percentages, the interesting fact is shown that in the dry periods the proportion or percentage of run-off to rainfall is less than that in the wet periods. Thus, for the wet period in the Sudbury River, Mass., area, 1875 to 1903, the run-off was 49.3 per cent of the rainfall, while for the dry period 1904 to 1918 it was only 38.7 per cent; for the exceptionally dry year of 1883 it was 34.1 per cent, and for the year 1911 it was 28.1 per cent. Similarly, on the Stony Brook, Mass., area, for the wet period 1890 to 1903, the run-off was 42.9 per cent of the rainfall, for the dry period, 1904 to 1918, it was 40.5 per cent, and for the year 1910 it was only 27.1 per cent of the rainfall. In other words, a diminished rainfall gives not only a diminished run-off, but a diminished proportion of run-off. From these facts it is evident that it may not be safe to draw conclusions, even from a forty-year record,

vithout a careful study of the records of other places and other periods, in order hat proper allowance may be made for abnormal results which may have been obained.

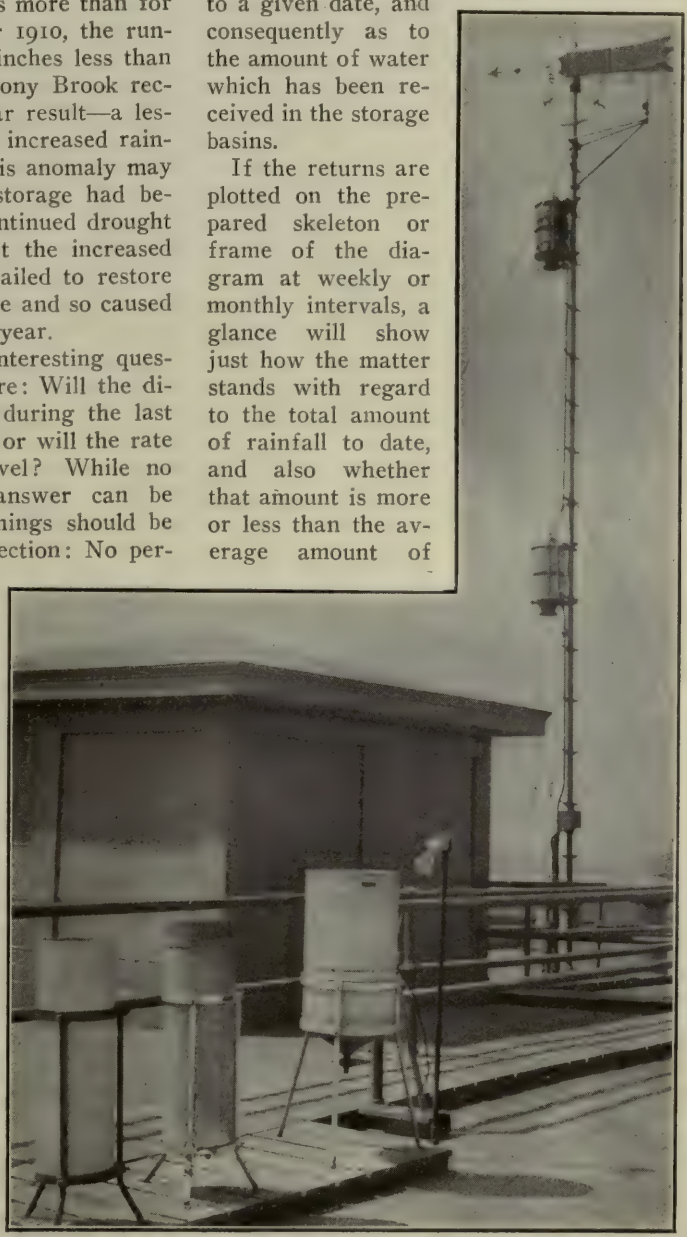
There is another rather curious fact hown in the records for the year 1909 vhich may be noted. While the rainfall for his year is about six inches more than for either of the years 1908 or 1910, the run-ff for 1909 is about 1.50 inches less than or the year 1908. The Stony Brook recrds show the same peculiar result—a lesened run-off in a year of increased rainall. The explanation of this anomaly may e that the underground storage had beome so depleted by the continued drought f a number of years that the increased ainfall for the one year failed to restore he deficiency in this storage and so caused lessened run-off for that year.

A very important and interesting quesion may be raised just here: Will the diminished rainfall as noted during the last fteen years be permanent, or will the rate "come back" to its old level? While no definite or authoritative answer can be given to the query, two things should be remembered in this connection: No permanent marked changes ever take place in the processes of nature without adequate cause. No such adequate cause is apparent by which the rainfall of New England could be permanently diminished, and again, in the past marked changes have occurred in meteorological conditions,—cold winters, hot summers, wet and dry seasons,—some continuing for considerable lengths of time, but inevitably the balance has been restored and the general mean of conditions reëstablished.

A Graphical Summary of Rainfall Is Valuable

A very practical and convenient way of using the daily rainfall records is by plotting them in the form of a mass diagram. Probably one of the most common inquiries a superintendent of water-works has to answer is one relating to the condition of the reservoir as regards the supply in storage. Much misconception frequently exists in the mind of the "average citizen" as to the amount of rain which has fallen to a given date, and consequently as to the amount of water which has been received in the storage basins.

If the returns are plotted on the prepared skeleton or frame of the diagram at weekly or monthly intervals, a glance will show just how the matter stands with regard to the total amount of rainfall to date, and also whether that amount is more or less than the average amount of



Courtesy of U. S. Weather Bureau

TYPES OF RAIN-GAUGES AND OTHER RECORDING DEVICES USED IN GOVERNMENT WEATHER BUREAU STATIONS

rainfall up to that time.

It is a rather curious fact that, taking a long term of years, the average monthly rainfall differs but little, the rainfall of the so-called "dry months" being on the average but little less than that of the wet months. The greatly increased evaporation during the hot months, together with the demands of growing vegetation, makes the rainfall seem much less than it really is and results in a greatly decreased run-off during those months. As the evaporation from ponds, brooks and reservoirs amounts to over 39 inches during an average year in New England, it will be seen that the presence of large water surfaces in a watershed may have an important bearing on the amount of run-off to be expected from it.

The distribution of the rainfall during the year has an important bearing on the amount of the yield or run-off. If the rainfall is largely during the season when the ground is frozen, a much larger run-off may be expected than if it occurred during the hot months, when the ground is dry and evaporation rapid. This distribution and also the accumulated amount of rainfall to any date during the year can very clearly be shown graphically by plotting each rainfall record on a print of a skeleton diagram.

Thus it will be seen that the rainfall records can be made to serve a variety of practical purposes, and that long-time records obtained on or near the ground are mos reliable and satisfactory.

Types of Rain-Guages

The cost of an ordinary rain-gauge (no automatic or self-recording) is small, an its care and maintenance require only th attention which can be given to it by som intelligent employe on the ground, or b some resident for a nominal sum.

If it is desired to obtain automatic rec ords of the rainfall, a more complicate and expensive type of gauge can be in stalled, and the data obtained will be very useful in the study of many questions no covered by the mere *quantity* of rainfall especially such as relate to the time at which the rainfall occurred and its intensity o rate per hour at any given time. These data are very interesting and sometimes are exceedingly valuable as factors relating to the required strength and height of dams length of spillways, size of culverts, damages caused by floods, overflows, washouts raising or lowering of the water in storage reservoirs, and a great variety of other questions of a similar nature.

If a watershed is large and the works established upon it are important and involve a large investment of capital, the establishment of an automatic rain-gauge is strongly recommended.

* From a paper read at the February, 1919, meeting of the New England Water-Works Association.

Make Daylight Saving Contribute To Health

Now that daylight saving has again added an hour of daylight to the late afternoon, health officers everywhere should endeavor to make this contribute to general health and welfare by impressing on the people the desirability of spending the extra hour in the open air. In many instances part of the time might well be spent in walking home from work rather than riding in crowded street cars. The suburbanite may find health and pleasure by cultivating a patch of garden. Even the tenement dweller in the large city may profit by spending some of his leisure time in the parks or, where this is not feasible, on the roof of his house. In some communities organized hiking has been conducted and has contributed largely to the promotion of outdoor life.

Illinois Municipalities Demand Home Rule

On March 18, approximately 200 mayors, aldermen and other representatives of Illinois municipalities called upon the Governor and the Legislature in support of Senate Bill No. 221 giving the right to municipalities to withdraw the regulation of public utilities from the State Commission and placing such utilities under the direct control of the municipalities. Reports of the demonstration before the Legislature revealed the fact that the representatives of some 87 cities in the state were united in support of the bill and were either present in person or had filed memoranda supporting it. Organized labor was also represented in the delegation and took an active part in the support of the measure.

Fire Hazards That Should Be Anticipated

Alterations and Adjacent Construction Often Create Dangerous Conditions in Buildings

By William H. Murphy
Chief, Fire Department, Philadelphia

THE exposure hazard can be observed by even the most untrained in fire-fighting. Very often the dangerous condition is created thru ignorance, inattention or lack of thought, and, again, it may be created thru congestion or faulty construction. In many instances it has not sprung up over night, but has grown gradually as a result of the extension and development of many business enterprises.

Exposure hazards exist in many forms. I have noticed on many occasions so-called fire-resisting or modernized buildings being placed almost in direct contact with some old fire trap. Many of these fire-resisting (or, as wrongly termed, "fire-proof") buildings are without any protection whatsoever from outside fires. In many instances, wooden window frames with plain ordinary glass are furnished, with no fire shutters, outside sprinkler or water curtain appliances. However, in some instances where these appliances have been installed, it has been proved that fires have occurred when the buildings were located close by existing fires, because of sufficient heat having been generated to break down these barriers. That only brings to us the realization that we can never be too well protected from fire, either from inside or from outside causes.

In almost all large cities (and even in some of the smaller ones) we have many existing cases of this exposure hazard, and this fact must be recognized. For instance, lumber yards, saw mills, box factories and chemical works of various kinds are all of such a nature that, once fire attacks them, a sufficient heat is generated to make a fast-sweeping fire; and these buildings are in many instances placed in close proximity to warehouses, other mills, factories or chemical plants, or adjacent to large office buildings and dwellings. Frequently storehouses of lumber, hay or straw, or manufactured goods are located on railroad sidings.

The wide-awake business man of to-day takes thought to protect himself from fire wherever possible. The vigilance of the fire protection inspectors, as well as of the fire insurance companies, has helped to reduce the exposure hazards, but with all this, we still have careless, inconsiderate people to consider.

Where the exposure hazard exists thru the development of a business enterprise, the prudent owner has installed metal window frames with wired or heavy plate glass. (Plate glass, we have been informed by one of our most efficient fire chiefs, will withstand as great heat as wire glass and is an equal resistant.) Or, if he has not applied the metal frame and wire glass, he at least has his metal-covered shutters and frames, with a sprinkler attachment at each window and very often water curtains covering the whole outside of the building. On the inside, he will have sprinkler appliances thruout; and on the outside, stand-pipes, hose lines and steamer connections.

It has often been experienced that where fires of intensity have existed, buildings 200 or more feet away have ignited from the heat alone and not from sparks having been carried. This has been caused particularly thru lack of protection, the existing conditions having actually invited the fire. Experienced fire-fighters know that when fire generates sufficient heat it practically converts the water thrown upon it into its constituent parts (hydrogen and oxygen) which then travel in waves of heat. It is where such conditions as these exist that the exposure hazards must be given particular attention.

Another exposure hazard that exists in some sections of the country is the use of wooden shingles. Where wooden shingles cover a roof a heavy fire brand or a spark from a fire is apt to alight thereon. The danger is apparent at once. Another danger from the wooden shingle is the possibility of its ignition when lightning strikes

a conductor on the building or when the refuse charge from a gas or toy balloon descends and alights on the roof.

"Exposure hazards" is a term that can be applied to a condition where broken panes of glass are permitted to remain, as sparks are very often carried unobserved directly into the opening.

Exposure hazards exist not alone in buildings such as are described above, but occasionally hazardous conditions are created in some of the slow-burning or fire-resisting structures thru the making of alterations, such as breaking thru fire walls, making openings in ceilings to the floor above for the purpose of conveying goods from one floor to the other and for the construction of dumb waiters and chutes. When a fire starts on one floor, it has every opportunity to pass out of that particular part to the other floors thruout the building, mainly because of the opportunity created by these alterations.

It is therefore essential, in order to eliminate exposure hazards, to give attention to these conditions at all times. Particular effort must be made to insist that all outside openings be protected by either standard fire shutters or wire glass windows. When the exposure to fire hazards is more than ordinary, it must be required in addition that a complete set of open outside sprinklers be installed, to create a curtain effect, and that these sprinklers be provided with ample water supply to keep them in constant service as long as required. Last but not least, wooden shingles should be entirely eliminated.

Grade Crossing Elimination In Portland, Ore.

By O. Laurgaard
City Engineer

FROM the Willamette River to East Thirty-third Street the O. W. R. and N. R. R. (Union Pacific) traverses the city of Portland thru a natural depression known as Sullivan Gulch. The grades of streets crossing this gulch were placed at ground level, and ample clearance was thus secured. But east of East Thirty-third Street, in what is now a rapidly growing section, the streets crossed the tracks at grade.

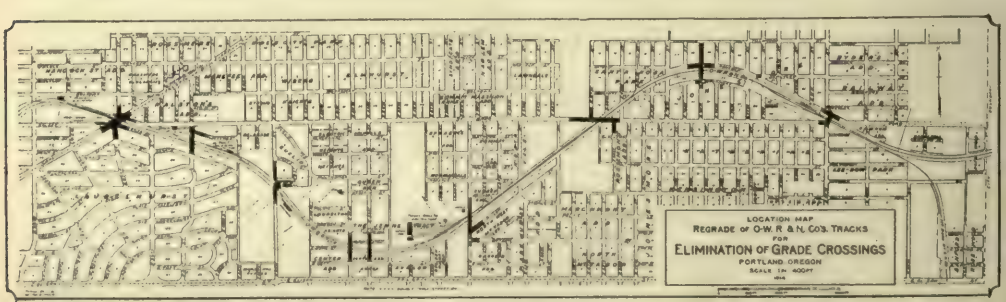
For some years the matter of grade separation has been agitated on account of the heavy traffic on these streets, particularly Sandy Boulevard and East Sixtieth Street. The city charter specifies the procedure in such work, briefly, as follows:

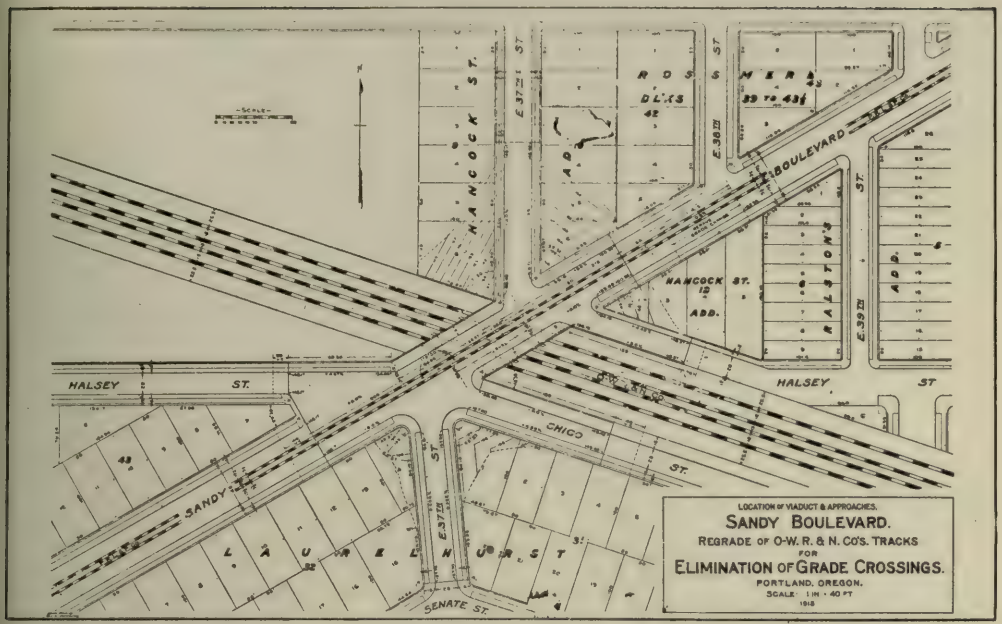
a. The City Council may by ordinance declare a grade crossing to be dangerous, and direct the City Engineer to prepare plans for its elimination.

b. In drawing up these plans the City Engineer must confer with the railroad engineers.

c. The cost of raising or lowering the tracks not within street lines is borne by the railroad. All other costs, including damage to abutting property, are borne, 60 per cent by the railroad, 20 per cent by the city from general funds, and 20 per cent by an assessment district.

In October, 1915, the City Council formally declared nine crossings between East Thirty-third Street and the city boundary to be dangerous. Plans were filed in 1916 by the City Engineer for depressing the





tracks over the entire distance, with overhead viaducts to cover four lines of tracks at all but two crossings. which were eliminated entirely. The plans called for the lowering of the tracks a distance of 12 feet thruout the section between Sandy Boulevard and East Eighty-second Street. The excavation was made in three cuts, the first cut, to a depth of 6 feet, being made to one side, and the material loaded onto cars on the original main line. The track was then dropped into this cut, and the rest of the excavation was made to final grade, after which the track was dropped to grade and the remaining "shelf" removed.

The typical viaduct used has concrete abutments with vertical faces extending down to track level. These were designed as self-supporting retaining walls, of the buttressed type, with extended toe in front, and are about 25 feet above the track subgrade. The bridges are of rolled Bethlehem I-beams unpainted, encased in concrete and supporting a reinforced concrete deck. The beams are spaced 5 feet apart in the roadway, and 7 feet apart under the sidewalk, with two beams supporting each street car track. The sidewalk slab is finished off to form a wearing surface, but the roadway slag is covered by a special cushion of clay, sand, and creosoted shavings, upon which the pavement is laid. Approaches are in all cases composed of fills between reinforced concrete retaining walls or having side slopes, the method depending on the value of the abutting property.

The Halsey Street viaduct consists of a single plate girder thru-span. The perpendicular distance between abutments is 54 feet, but the 53 per cent skew necessitated girders 95 feet in length, which were placed outside of the sidewalk. The plate girders are of ⅜-inch web plates, 8 feet 6 inches wide, with flanges of two 8x8x1-inch angles, and seven cover plates 18 inches wide, three being ½-inch thick, and four being ¾-inch. Each girder weighs 48 tons.

Before any work could be done on the track lowering, two large water mains had to be lowered to prevent interruption of service. Under the Sixtieth and Forty-seventh Street viaducts concrete subways 6 feet square were provided, with concrete saddles for supporting these water mains.

The accompanying drawings and photographs show the general problem and the treatment of the particularly puzzling crossing at Sandy Boulevard. Altho the plans call for a cut and viaducts to accommodate four lines of track, the railroad has so far provided for only two. The others will be added when the traffic warrants the additional outlay.

Difficulties in getting supplies and labor delayed the work so that it could not be completed within the specified time. By the end of March all the underground work, such as lowering the water mains, sewers, etc., had been completed. The excavation had been made and the permanent tracks laid. The substructure work—abutments, piers and retaining walls—was practically complete.

The preliminary estimated cost of the city's portion of the work, including damages to abutting property owners on account of changes of grade, is $555,000. The cost of lowering the tracks is estimated at $500,000, making the total expenditure in the interest of the safety of the public $1,055,000.

On the Calendar of Conventions

MAY 1.—ST. LOUIS, MO.
National Association of Commercial Organization Secretaries. Readjustment Conference. Secretary, J. P. Hardy, Commercial Club, Fargo, N. Dak.

MAY 6-8.—OTTAWA, ONT.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 87 Milk Street, Boston, Mass.

MAY 12-13.—CHICAGO, ILL.
American Association of Engineers. Annual convention. Secretary, C. E. Drayer, 29 South LaSalle Street, Chicago, Ill.

MAY 12-13.—ROME, GA.
Southeastern Sanitary Association. Annual meeting. Secretary, Dr. Clarence E. Smith, Columbia, S. C.

MAY 14-15.—SWEETWATER, TEX.
League of Texas Municipalities. Annual convention. Secretary, Capt. Frank M. Stewart, University of Texas, Austin, Tex.

MAY 16.—NEW YORK CITY.
American Institute of Electrical Engineers. Annual business meeting. Secretary, F. L. Hutchison, 33 West Thirty-ninth Street, New York City.

MAY 16-17.—AKRON, OHIO.
Ohio Commercial Secretaries' Association. Annual convention. Secretary, Vincent S. Stevens, Chamber of Commerce, Akron, Ohio.

MAY 19-24.—ATLANTIC CITY, N. J.
National Electric Light Association. Annual convention. Secretary, T. Commerford Martin, 29 West Thirty-ninth Street, New York City.

MAY 20-22.—QUEBEC, QUE.
Canadian Good Roads Association. Annual convention. Secretary, George A. McNamee, New Birks Building, Montreal, Que.

MAY 26-28.—TORONTO, ONT.
Canadian Public Health Association. Joint congress with the Ontario Health Officers' Association, being the annual meetings of both organizations. General Secretary of Canadian Public Health Association, J. G. Fitzgerald, M. B., Toronto, Ont.

MAY 26-28.—ATLANTA, GA.
Southern Commercial Secretaries' Association. Annual convention. Secretary, C. W. Roberts, Bristol, Va.-Tenn.

MAY 27-28.—NIAGARA FALLS, N. Y.

MAY 29.—BUFFALO, N. Y.
American City Planning Institute. National Conference on City Planning. Secretary, Flavel Shurtleff, 19 Congress Street, Boston, Mass.

JUNE 1-8.—ATLANTIC CITY, N. J.
National Conference of Social Work. Annual conference. General Secretary, William T. Cross, 315 Plymouth Court, Chicago, Ill.

JUNE 9-10.—PHILADELPHIA, PA.
Pennsylvania Housing and Town Planning Association. Annual meeting. Secretary, John Ihlder, 130 South Fifteenth Street, Philadelphia, Pa.

JUNE 9-13.—BUFFALO, N. Y.
American Water Works Association. Annual convention. Secretary, J. M. Diven, 47 State Street, Troy, N. Y.

JUNE 10-12.—SCHENECTADY, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual conference. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JUNE 13-14.—YORK, PA.
Pennsylvania Commercial Secretaries' Association. Annual meeting. Secretary, C. H. Heintzelman, Chamber of Commerce, Coatesville, Pa.

JUNE 14-17.—ATLANTIC CITY, N. J.
National Tuberculosis Association. Annual meeting. Assistant Secretary, Philip P. Jacobs, 381 Fourth Avenue, New York City.

JUNE 16-20.—SALT LAKE CITY, UTAH.
International Association of Rotary Clubs. Annual convention. Secretary, Chesley R. Perry, 910 South Michigan Avenue, Chicago, Ill.

JUNE 17-18.—GREENWOOD, S. C.
Tri-State Water and Light Association of the Carolinas and Georgia. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.

JUNE 17-20.—ST. PAUL AND MINNEAPOLIS, MINN.
American Society of Civil Engineers. Annual convention. Secretary, Charles Warren Hunt, 33 West Thirty-ninth Street, New York City.

JUNE 23-26.—KANSAS CITY, MO.
Southwestern Water Works Association. Annual meeting. Secretary, E. L. Fulkerson, 617 Washington Street, Waco, Tex.

JUNE 23-28.—ASBURY PARK, N. J.
American Library Association. Annual convention. Secretary, George B. Utley, Library of Congress, Washington, D. C.

JUNE 24-27.—ATLANTIC CITY, N. J.
American Society for Testing Materials. Annual meeting. Assistant secretary, C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

JUNE 24-27.—KANSAS CITY, MO.
International Association of Fire Engineers. Annual convention. Secretary, Chief James McFall, P. O. Box 611, Philadelphia, Pa.

JUNE 25-27.—LANSING, MICH.
League of Michigan Municipalities. Annual convention. Secretary, Robert T. Crane, University of Michigan, Ann Arbor, Mich.

JUNE 29-JULY 5.—MILWAUKEE, WIS.
National Education Association of the United States. Annual meeting. Secretary, J. W. Crabtree, 1400 Washington Avenue, N. W., Washington, D. C.

JULY 21-26.—WINONA LAKE, IND.
Indiana Commercial Secretaries' Association. Annual meeting. Secretary, Don R. Sidle, Chamber of Commerce, Vincennes, Ind.

NOVEMBER 12-14.—NEW ORLEANS, LA.
American Society of Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, 804 East Walnut Street, Bloomington, Ill.

The Disposal of Sewage by Treatment With Acid

Increased Conservation of Fertilizing Elements and Grease the Aim of the Miles Acid Process

BEGINNING about the year 1900 the use of acid was suggested to accelerate the precipitation and separation of sludge, and it was proposed to recover fats and fertilizer from the sludge so produced. The most important factor in the new process consists in the application of the acid to the sewage itself, rather than to the sludge precipitated therefrom; and it lays emphasis upon the decomposition of the soluble soaps and the liberation of the fatty acids, which latter do not appear as fats when unacidified sewage is tested by standard methods, and are not precipitated with the sludge in plain subsiding basins. Furthermore, George W. Miles, the originator of the acid treatment, has suggested the use of sulphur-dioxide gas rather than the sulphuric acid made from it, thereby avoiding several expensive steps in its manufacture and greatly reducing the cost, besides bringing into play the disinfecting action of the sulphur-dioxide gas upon the sewage itself. If desired, a combination of sulphuric and sulphurous acids may be used. Sodium acid sulphate (niter cake) is the waste product from the nitric-acid plants, and, as a result of the war, there are enormous quantities of this material piled near nitric-acid plants, for which there is now little use. At the present time this is the cheapest source of sulphuric acid. Before the war, the cheapest source was either sulphur or pyrite.

Experiments

Experiments with the Miles acid process were made at different times between June 20, 1911, and June 29, 1914. In all, eleven runs were made at different times during the four years, and 25,986 gallons of sewage were treated. The quantities of products recovered per million gallons of Boston sewage, during these experiments, were, as averaged, 1,738 pounds of dry sludge, containing 21.7 per cent or 436 pounds of grease, and 1,361 pounds of fertilizer base, having an ammonia content of 4.5 per cent. Two continuous runs were made, one of seven days in July, and one of three days in November, 1915; and the volume of sewage treated averaged 8,241 gallons daily. The experiments almost duplicated the earlier runs.

Comparative Experiments With Other Processes

Extensive experiments have been conducted by Prof. C. E. A. Winslow of the Yale University Medical School, and Dr. F. W. Mohlman, now chemist of the Connecticut State Department of Health. The experiments were conducted at New Haven under the auspices of a special committee, and consisted of four long-time runs with the sewage from the East Street sewer, and one run with that from the Boulevard sewer, the former runs varying from 24 to 70 days, the latter being 29 days' duration. Alongside the experiments with the Miles acid process, there were conducted experiments with screens, with the activated sludge process, and with Imhoff tanks and with plain subsiding basins, with and without chlorine disinfection.

In the experiments with the Miles process, the sewage was acidified with sulphur-dioxide gas, and a four-hour period of subsidence was provided. The alkalinity of the East Street sewage was very low, so that it was necessary, to secure an excess acidity of 50 p. p. m., to add only 700 pounds of gas per million gallons of sewage treated. With the Boulevard sewage, 1,130 pounds of acid per million gallons of sewage were required to secure the same excess acidity (computed in terms of calcium carbonate).

The treatment removed from 61 per cent to 66 per cent of the total suspended, and 90 per cent of the settleable solids. The removal of bacteria was all that could be desired, the two last experiments, with the East Street and Boulevard sewages respectively, indicating removals of over 99 per cent of the total bacteria, and of the gas-forming organisms.

The use of acid accelerated the precipita-

ESTIMATED COST OF TREATMENT OF EAST STREET SEWAGE, NEW HAVEN. DOLLARS PER MILLION GALLONS

	Miles Acid Process	Imhoff Tanks and Chlorination	Fine Screening and Chlorination
Tanks and buildings (interest and depreciation) ..	2.47	5.28	4.60
Acid treatment...	6.93		
Drying sludge...	2.09		
Degreasing sludge	1.78		
Redrying sludge.	.17		
Superintendence..	1.06	.46	.46
Labor on tanks and screens.....	1.00	1.20	1.42
Disposal of sludge or screenings...		1.00	.50
Chlorination		4.05	4.05
Gross cost	15.50	11.99	11.03
Revenue	6.57		
Net cost	8.93	11.99	11.03

ESTIMATED COST OF TREATMENT OF BOULEVARD SEWAGE, NEW HAVEN. DOLLARS PER MILLION GALLONS

	Miles Acid Process	Imhoff Tanks and Chlorination	Fine Screening and Chlorination
Tanks and buildings (interest and depreciation) ...	2.47	4.44	4.60
Acid treatment...	10.74		
Drying sludge ...	2.04		
Degreasing sludge	1.91		
Redrying tankage.	.17		
Superintendence..	2.65	1.15	1.15
Labor on tanks and screens.....	1.00	1.50	2.05
Disposal of sludge or screenings...		1.00	.50
Chlorination		4.05	4.05
Gross cost	20.98	12.14	12.35
Revenue	10.66		
Net cost	10.32	12.14	12.35

tion of the suspended solids by about 50 per cent, only 40 per cent being removed from the untreated sewage by plain subsidence as compared with 60 per cent when the Miles process was used.

Opposed to these very favorable results is the presence in the grease extracted from the sludge of a large proportion of unsaponifiable material (waxes, mineral oils and similar substances). Substances of this kind are practically worthless, and their removal is attended with a great deal of expense. The sludge from the East Street sewers contained 24 per cent of grease, 46 per cent of tankage and 28 per cent of water.

Winslow and Mohlman are advised by experienced users of grease that it would be necessary to distill the crude extracted product in order to produce a salable grease. The fact has been recognized, and, on the basis of distillation experiments, they estimate that the grease in the East Street sewage would be worth $5.00, and the fertilizer $2.09 per million gallons—a total of $7.09 net—while the grease value of the Boulevard sewage would be $8.50 and the fertilizer value $2.88 per million gallons, a total of $11.38, net.

Conditions at New Haven are such that the effluent must be clarified and disinfected, but not necessarily nitrified. These conditions are favorable to the Miles process; to Imhoff tanks combined with chlorination; and to fine screening combined with chlorination, respectively. The activated sludge process would not work because of the presence of copper salts in the sewage.

The operation costs of the disposal plant are estimated in the tables given above.

The results of these experiments have warranted the New Haven Committee in recommending the Miles process for adoption by the city of New Haven, and that a plant be built first at the East Street sewer, which discharges 16,000,000 gallons daily, and, if this plant is successful, the sewage from the other outfalls should be treated.

The Practicability of the Process for Boston Sewage

It is interesting to apply the New Haven estimates of cost to the results of the experiments with Boston sewage which have been made. These experiments showed that Boston sewage yielded about 1,500 pounds of degreased tankage, containing 4.53 per cent of ammonia; also about 400 pounds of recoverable grease per million gallons. With fertilizer ammonia at $4.00 per unit, the tankage is worth $18.12 per ton, or $13.59 per million gallons of sewage. Using 8.5 cents as the price per pound for the recovered grease, the grease would be worth $34 per million gallons.

COST PER MILLION GALLONS OF TREATING 100,000,000 GALLONS OF CALF PASTURE, BOSTON, SEWAGE DAILY, APPLYING THE UNIT COSTS ESTIMATED BY WINSLOW AND MOHLMAN FOR 16,000,000 GALLONS OF NEW HAVEN SEWAGE DAILY

	Calf Pasture Sewage	Boulevard Sewage
Tanks and buildings.....	$2.47	$2.47
Acid treatment	18.65	10.74
Drying sludge	10.35	2.04
Degreasing sludge	9.12	1.91
Redrying tankage	.10	.17
Superintendence	1.06	2.65
Labor on tanks and screens..	1.00	1.00
Total cost per million gallons.	$42.75	$20.98

In applying the New Haven unit costs, no subtraction has been made on account of the larger plant or the available tanks at Moon Island. Unit costs for all items except superintendence and labor are those used for Boulevard sewage; the unit costs for superintendence and labor are those used for East Street sewage.

The estimated net financial result of operation is given in the following table:

ESTIMATED FINANCIAL RESULTS OF OPERATING THE MILES ACID PROCESS AT THE CALF PASTURE

	Per Million Gallons
Revenue	
From tankage	$13.59
From grease	34.00
Total gross revenue	$47.59
Expenses	
Estimated cost of treatment	42.75
Profit on above basis	$4.84

In the above the price of ammonia has been estimated at $4 per unit. This is low at present. When ammonia is worth $4.50 a unit, the gross revenue would be $49.29, and the profit $6.54 per million gallons. While the above estimate shows a profit under present conditions, it is probably true that under pre-war conditions the process would not produce a revenue.

The sludge from the Miles process contains much less moisture than activated sludge, and about the same as the subsiding basin sludge and the Imhoff tank sludge, as the following table shows:

Kind of Sludge	Average Percentage of Moisture in Sludge	Relative Volumes of Sludges Containing the Same Amounts of Dry Matter
Activated sludge	98.5	100
Subsiding basin sludge	91.5	18
Miles Process sludge	90.0	15
Imhoff tank sludge	89.0	9.5

As compared with activated sludge, the advantage of handling less than one-seventh of the volume of activated sludge is obvious.

Installation Cost

The devices required for the operation of the Miles process are the following:

Devices for producing sulphur-dioxide gas, and for feeding niter cake or other forms of acid
Subsiding basins
Sludge-handling apparatus
Sludge driers
Grease extractors
Grease stills
Tankage driers and grinders

While the list is formidable and is enough to rule out the acid process from small plants, in the case of a city like Boston the cost should not exceed $15,000 per million gallons.

Further Information Necessary

While all of the large-scale trials of the process have given promising results, it is true that the drying and degreasing of sludge has never been practiced on a large scale. All the estimates are based upon small-scale trials and the opinions of engineers and of manufacturers who have handled similar materials. There is a great need, therefore, for a large-scale experiment with normal sewage to determine the actual possibilities in practice.

Conclusions

Following are the conclusions from the results of the various experiments and studies:

(1) The Miles process will produce a well-disinfected effluent from which 90 per cent of the settleable solids have been removed.

(2) Whereas it requires for its accomplishment devices for the chemical treatment of the sewage and for drying and degreasing the sludge, competent supervision is necessary.

(3) On account of the nature of the plant and the relatively high cost of operation for small installations, it is not well adapted for the purification of the small volumes of sewage.

(4) Its operation should cause no local nuisances.

(5) It causes the removal of over 99 per cent of the bacteria.

(6) The effluent remains stable long enough for the neutralization of the excess acid, and the oxidization of the sulphites and the sulphates by dilution.

(7) As compared with the activated sludge process, the volume of sludge is very small.

(8) Compared with the cost of the oxidation processes, the cost of installation is low; it is somewhat higher than that for Imhoff tanks with chlorination.

(9) The products recovered are valuable, and their recovery would effect a conservation of natural resources.

(10) Apparently it is the most economical process for producing so well-clarified and so stable an effluent, and under present conditions it seems as if it could be installed and operated at a profit in those large cities where the conditions are favorable.

(11) To determine the costs of sludge drying and degreasing more accurately than is possible from the available data, a large-scale experiment is urgently needed.

ACKNOWLEDGMENT.—From a paper read before the Boston Society of Civil Engineers by E. S. Dorr and Robert S. Weston.

Common Sense, Science and Drinking Fountains

By J. H. Dunlap

Associate Professor of Hydraulics and Sanitary Engineering, College of Applied Science, State University of Iowa, Iowa City

THE present drinking fountain situation is anomalous, to say the least. "Less art and more common sense" might well be made the slogan of a crusade against many of the types of so-called sanitary drinking fountains now on the market.

The Need of Mouth Guards on Bubbling Fountains

The bubbling fountain without a mouth guard is like a gun without powder: the most important factor in its usefulness for public protection has been overlooked. In the case of the customary vertical-jet type of fountain without a mouth guard, the lips of the drinker are apt to be placed directly upon the metal top of the bubbler. In this way bits of mucous membrane and germs from the lips are almost sure to flavor the drink of the next user of the fountain. In order to show just how the public uses such fountains, some data were recently obtained. The use of two fountains, both without mouth guards, was observed. One fountain was of the continuous-flow type, with the bubble 5/8-inch in height. It was located in a public library. During the period of observation 59 persons drank from the fountain, 22 of whom were children, and 37, adults. Of the 22 children, 15 placed their lips upon the metal top of the bubbler in drinking, while 7 did not. Of the 37 adults, 28 placed their lips upon the metal top, while only 9 did not. One adult had an eruption upon the face, and one was apparently in bad general health.



CLEANLY AND SAFE: A GOOD FOUNTAIN FOR PUBLIC USE

The second fountain was of the intermittent-flow type, with a bubble 3/4-inch in height. It was located at a street corner. Forty-three persons were observed while drinking. One was a small child that had to be assisted in order to drink. This child placed its lips upon the metal top of the bubbler. Of the remaining 42 persons, 18 were children, and 24, adults. Ten of the 18 children placed their lips upon the metal top, while 8 did not. One of these children was apparently in bad general health. Nine of the 24 adults placed their lips upon the metal top, while 15 did not.

Not long ago a Federal inspector in the United States Public Health Service observed the use of a certain fountain. Upon one occasion 47 persons drank; and in almost every case the lips were placed upon the metal top. Of the 47 who used the fountain, 3 appeared to be tubercular and 3 had an eruption upon the face. Such facts are conclusive evidence of the need of mouth guards with all fountains.

The Dangers of the Vertical-Jet Fountain

It seems obvious in the case of fountains with vertical jets that water which has touched the lips may fall back upon the metal tops. In a recent visit to a large city, fountains apparently new and very attractive in appearance were observed upon the corners of a public square. The Mayor of the city and his associates seemed to be very much surprised when told that these fountains were quite unsanitary.

The fresh water bubbles up thru a cup of more or less stagnant water which could not drain out. Of course the water which touches the lips of the drinker falls back into this cup and seriously contaminates it. A simple experiment will enable anyone to discover how long such polluted water may remain in the undrained cup. By adding a little stain or coloring matter, it will be found that a long period of time is required before all traces of it have disappeared. While this fountain is bad enough in the continuous-flow type, it is much worse in the intermittent-flow type.

But suppose the bubbler is designed so that the incoming fresh water cannot pass thru a stagnant cup of water. Suppose the fountain is of the intermittent-flow type. It should be easy to see that when the flow stops, the water which is at that moment in contact with the lips may fall back upon the metal top of the bubbler and from this resting-place be carried to the lips of the next drinker. Moreover, if the bulb forming the nozzle is so made that it may drain out, some of the germ-laden water may be drawn back inside the bulb. Then the next flush of water will be likely to carry some of the germs to the lips of the drinker who is so unfortunate as to come next.

While this danger of contaminated water falling back upon the metal top in the case of intermittent jets is self-evident, it is by no means so clear that the same danger exists with continuous jets. Science, however, may be called to our aid in the investigation of fountains with continuous vertical jets. Laboratory tests seem to prove that such fountains are almost equally guilty with those of the intermittent type. Whether or not this is due to faulty design has not yet been clearly demonstrated. The experiments made at the University of Wisconsin* were upon a bubbler of the continuous-flow type, formed by four perforations in the top of a cylinder which screwed into the center of a hollow metal bulb. The experimenters performed the interesting test of washing out their mouths with suspensions of *B. prodigiosus,* and while the lips were still moist they drank from the fountain when the bubble was 2 to 3 centimeters in height. They were careful not to touch the metal top of the fountain. In one instance they found that the bacteria thus introduced were retained for 135 minutes. The average time of retention was 25 minutes. The theory was advanced that the reason why these bacteria were retained for so long a time by the bubble was that the organisms danced on the column of water, much as a ball dances on a garden fountain. Further tests should be made in order to show more clearly why so long a period of retention of bacteria is possible. It may be that the particular design of vertical-jet, continuous-flow fountain used in these tests is responsible for the length of the retention period. At any rate, these experiments show clearly that even vertical-jet, continuous-flow bubblers may be a possible source of danger in the transmission of contagious diseases. It may prove impracticable to alter the design of continuous-flow, vertical-jet fountains so that the dangers they now present may be completely removed.



A FOUNTAIN OF THIS VERTICAL BUBBLER TYPE IN A CONGESTED BUSINESS SECTION MAY PROVE A SOURCE OF DANGER TO USERS

Other scientific evidence can be produced

* Pettibone, Bogart and Clark: "The Bacteriology of the Bubble Fountain," *The Journal of Bacteriology,* September, 1916, Volume I, No. 5, p. 471.

to show that the teachings of common sense have a basis in fact. For instance, the occasion of the experiments at the University of Wisconsin was an epidemic of streptococcus tonsilitis which occurred in the fall of 1914 in one of the women's dormitories. Fifty cases occurred in this building within a week's time. Upon an investigation of the bubble fountains in the building, it was found that the bubbles were so low that it was almost impossible to drink from them without touching the metal top with the lips. Bacteriological investigations of the fountains were made. The surfaces and even the interiors of the fountains, as well as the water bubbling from them, were found to be infected. It is a striking coincidence that an almost pure culture of streptococci was obtained from the inside of the bubbler on the third floor of this dormitory where the greatest number of cases were located. Subsequently a systematic examination was made of 77 bubble fountains at this University. Forty-three out of 77, or 55.8 per cent of the total, were found contaminated with streptococci. About a year later another investigation was made of 50 fountains, and 35, or 70 per cent of the total, were found infected with streptococci. Whittaker** has found in an investigation of the drinking fountains at the University of Minnesota that of 77 drinking fountains, 80 per cent were contaminated with streptococci. Sixty-five per cent of the fountains were of the continuous-flow type, and 25 per cent of the intermittent type. All were fountains with vertical jets.

The Slanting-Jet Fountain

Thus science has proved that the most serious violation of common sense of which our drinking fountains are guilty is that they are nearly all designed with vertical jets. As would be expected, experiments have shown that by slanting the jet at an angle of 15 degrees or more all the dangers inherent in the vertical type of jet will be overcome. The drink is then obtained at the highest point in the curved path of the jet. No water touched by the lips can fall so as to contaminate the source. The slanting-jet fountain shown is one type now being manufactured. This nozzle is simple, safe, and inexpensive. It may be attached to any type of fountain now on the market. This particular design is exceedingly well protected. Neither the face nor the hand can contaminate the source of the jet and it cannot be squirted by the small boy.

There are already at least four distinct types of slanting-jet fountains upon the market.

Conclusions

The following conclusions seem justified:

First, all intermittent-flow fountains with vertical jets should be unqualifiedly condemned.

Second, most continuous-flow fountains with vertical jets are shown by actual laboratory experiments to be possible sources of the spread of contagious diseases.

Third, no continuous-flow fountain with vertical jet should be installed without first obtaining the approval of the type selected by a competent sanitary authority or by a state board of health.

Fourth, slanting-jet fountains, whether of the continuous or of the intermittent type, are simple and safe.

Finally, while the case against the present types of sanitary drinking fountains might be continued further, it is hoped that enough evidence has been set forth to serve as a guide to the public in future purchases.

** H. A. Whittaker: "Drinking Fountains—An Investigation of Fountains at the University of Minnesota," *Public Health Reports*, May 11, 1917, Volume 32, No. 19, p. 691.

The Summer School of Community Leadership

The fifth annual session of the Summer School of Community Leadership will be held at Eagles Mere Park, Pa.—about forty miles northeast of Williamsport—July 14 to 26. It is conducted by the American City Bureau, of New York, as an adjunct to the Bureau's main work—organizing Chambers of Commerce. The purpose of the School is to place men who are engaged in Chamber of Commerce work closely in touch with the latest and most efficient practice in this field; and to provide men who wish to enter Chamber of Commerce work with the right philosophy and the understanding of Chamber of Commerce technique that will insure success.

Street Cleaning Methods and Cost In Jackson, Michigan

By W. B. Hodges
City Engineer

THE combined necessity of street maintenance, municipal cleanliness and sanitation demands that the streets of every city be kept free from dust and dirt to the greatest extent possible and with the maximum of economy. Efficient organization and the most up-to-date methods are necessary to accomplish the best results.

In Jackson prior to the first of August, 1918, the street cleaning equipment consisted of two horse-drawn machine brooms with sprinkler attachments. Two teams and six men were required for brushing and loading. On that date the city placed in operation a motor-driven flusher of 1,000 gallons capacity. This effected a saving of $12 per day for teams, and required only four men to brush and load, the flusher leaving a dirt line of about 20 inches in width in the gutter.

The foreman in charge is required to turn in to the superintendent of streets a daily report showing the streets cleaned, and the cost. Before the installation of the motor-driven flusher, the cost per thousand square yards amounted to 35 cents. After the new equipment was installed, it was found that the average cost of flushing one thousand yards was 5 cents, of picking up what was left in the gutter 18 cents, making a total of 23 cents, against 35 cents with the machine brooms. In addition to this considerable saving, it was found that the streets were much cleaner and that there was an almost complete abatement of the dust nuisance incident to street cleaning operations.

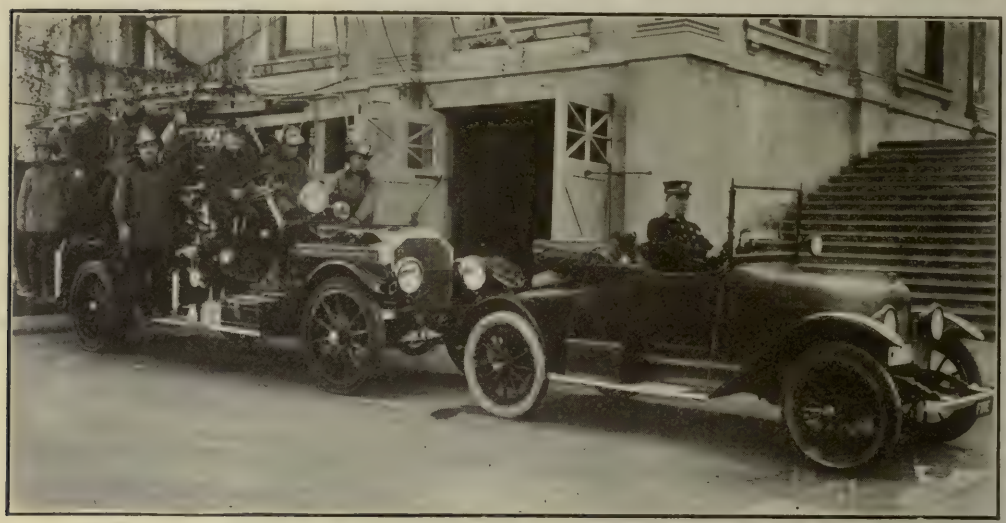
On the first of the year, a daily route for street cleaning was made out. On Sunday only the business district is cleaned, comprising about 60,000 square yards. During the week, resident streets are cleaned once, and streets in the warehouse district every Tuesday and Friday. The streets to be cleaned are so listed that the average yardage cleaned each day, with the exception of Sunday, amounts to 123,000 square yards.

Thru this planning, organization and allotting of work and the use of the motor-driven flusher, street cleaning in Jackson has now become much less of a problem than when horse-drawn apparatus was used,



THE JACKSON, MICH., STREET FLUSHER IN USE AS A SPRINKLER, COVERING THE WHOLE WIDTH OF PAVED WAY IN ONE TRIP

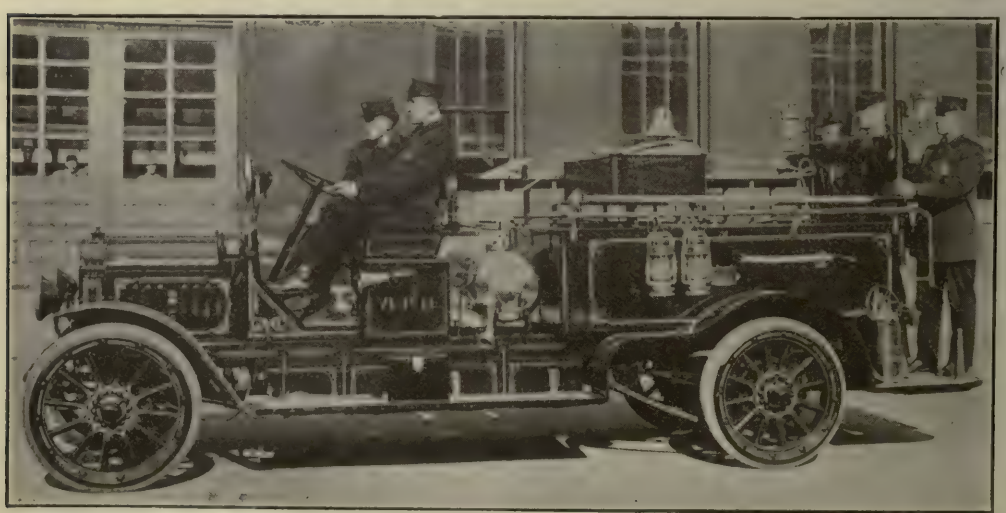
Motor Fire Apparatus, Sprinklers and Flushers: Users of Water for the Safety and Comfort of Cities and Towns



AN AMERICAN-LA FRANCE COMBINATION PUMPING AND CHEMICAL ENGINE AND HOSE CAR RECENTLY TESTED BY THE LOS ANGELES FIRE DEPARTMENT

Eight different tests of this pumping engine were held—three for capacity, one high-pressure test, a relief valve test, a quick-lift test, a vacuum test and a road test. The results of the capacity and pressure tests were as follows: 767 gallons per minute at 138 pounds pump pressure; 830 gallons per minute at 120 pounds; 730 gallons per minute at 145 pounds; and 420 gallons per minute at 260 pounds. It was found that the relief valves worked perfectly when shut-off tests were made, with the engine delivering capacity with one line shut off at a time until all three lines were shut off simultaneously.

In making the relief-valve test a 1⅛-inch tip was used in conjunction with a Gorter shut-off nozzle on each line. There was 300 feet of 2½-inch fire hose in each line. The engine did not race when lines were opened or closed, a slight increase in pressure being registered on the gauge until the relief valves equalized the pressure. In the tests on the suction, with the suctions drained, suction caps removed and all gates left open, the engine was running idle, and at a given signal started up full speed and water was lifted in two seconds.



A 1¼-TON GMC FIRE TRUCK IN USE IN ALTOONA, PA.



A 450-GALLON GRAVITY STREET SPRINKLER MOUNTED ON A REPUBLIC TRUCK, PENSACOLA, FLA.



CANADIAN CITIES ALSO USE STREET FLUSHERS. THIS 1,200-GALLON TIFFIN MOTOR FLUSHER AND SPRINKLER IS IN USE IN LONDON, ONTARIO, CANADA

News and Ideas for Commercial and Civic Organizations

Chamber Secures Legislation for Roads and Pure Water

ELIZABETH CITY, N. C.—Immediately after the signing of the armistice, the Elizabeth City Chamber of Commerce decided to inaugurate a comprehensive and result-getting campaign for better roads in Pasquotank County. Before starting the campaign in the county, it was deemed wise to get the city as well as the Chamber of Commerce behind the movement. A referendum on the subject, proposing a bond issue for road improvements, was therefore mailed to the citizens, and a copy of it was also published in the daily and weekly papers. It brought forth such a unanimously favorable response that the Chamber proceeded without further hesitation with the illustrated lecture campaign it had planned to conduct in the county.

A stereopticon, equipped with both acetylene and electric lights, was purchased. A mimeograph and an addressograph were also bought, to be used in sending out advance notices of each lecture. Eight lecture centers were established thruout the county, and meetings were held which drew crowded houses. Colored views were used, showing not only the financial, but the educational, social and moral value of better roads.

Petitions urging the Legislature to pass a bill authorizing a bond issue of $500,000 for the construction of roads in Pasquotank County were circulated during the campaign. They were readily signed, and at the end of the campaign the entire county was found to be unquestionably united in its support of the movement. The bill was duly introduced into the Legislature and was passed during the first week in March. The act makes the bond issue mandatory, and thus obviates the necessity of spending valuable time and money for the holding of an election to decide the question.

The success of the measure is attributable to the campaign of education and publicity conducted by the Chamber of Commerce, which took the people fully into its confidence and spared no pains to enlighten them on every phase of the subject. A road from Elizabeth City to Norfolk, a city of large and growing importance, has long been contemplated by both cities, and it is now assured, as well as a hard-surfaced road to the Pasquotank County line.

The Chamber has been successful also in bringing about legislation which assures the city a plentiful supply of pure water,—legislation which the local water and electric light company has been endeavoring to obtain for ten years at an expense of many thousands of dollars. Everybody knows that there is only one source of water supply for the people of Elizabeth City, and the company has been trying to get legislation thru which would permit it to build a dam and a filtration plant in order that the water might be conserved and made absolutely safe. The Chamber took up the matter about three months ago, had the water analyzed by the state chemist, and put a live committee on the job. As a result, the legislation was secured, the dam and a modern filtration plant, so long a dream, will soon be a reality, and Elizabeth City will have an abundance of the best water.

ELIZABETH CITY CHAMBER OF COMMERCE.

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Akron's Successful Bond Issues

AKRON, OHIO.—On March 4 the citizens of Akron voted in favor of several large bond issues, which will make it possible to put thru an ambitious program of municipal improvements that have been in contemplation for some time. One of the most needed of these improvements is an enlarged sewer system, for which bonds in the amount of $3,000,000 were voted, providing for an expenditure of about $1,000,000 a year for the next three years. Akron has greatly out-

grown its present system; this is not surprising when it is realized that the city's population has considerably more than doubled in the last nine years. An adequate sewer system will cost much more than $3,000,000, but that sum will provide the main trunk sewers that are required.

Bonds in the sum of $1,000,000 were voted for new schools, which have been made necessary by the steady increase in the school enrollment. Annexes are to be built to the South High School, also to the Lincoln and F. H. Mason schools; a new building is to be erected to take the place of the dilapidated Perkins Normal School, and a new school is to be built in Diagonal Road.

Bonds for $400,000 were also voted to provide additional funds for the erection of a viaduct about 2,800 feet in length, connecting the main business district by an extension of Main Street to the desirable residential district on the North Hill. A bond issue for $1,200,000 was approved in 1917 for this purpose, but the additional amount was required on account of the increased cost of labor and materials.

A bond issue for $100,000 for an addition to the Summit County Children's Home was also authorized. The Akron Chamber of Commerce backed the campaign for the bond issues vigorously, thru its monthly bulletin and in other ways.

VINCENT S. STEVENS,
Secretary, Akron Chamber of Commerce.

Transportation Problems Solved by Chamber of Commerce

QUINCY, ILL.—The local Chamber of Commerce was the means of settling a sharp controversy that arose a few weeks ago with the railroads entering Quincy. These roads had discriminated unjustly against the city in taking off certain passenger trains and reducing the mail and express service. They had also threatened to eliminate one of the principal railroad stations located in the heart of the city and to consolidate it with another station which is some distance removed from the center of the business district—in fact, almost at the edge of the city.

The Chamber issued an extra of its official bulletin *The Greater Quincy*, in which it attempted to arouse the citizens to a realization of the unfair treatment the railroads were according the city under the guise of patriotism, treatment which would result in crippling the city in the extreme. The Chamber of Commerce then called an indignation meeting of the citizens. It also circulated petitions addressed to the Railroad Administration protesting against the actions of the offending railroad companies and asking for relief. The campaign resulted in an announcement by the railroads that there would be no such consolidation of stations as had been anticipated, and in an agreement to relieve the situation created by the inadequate passenger, mail and express service.

The business interests of Quincy greatly appreciated the work of the Chamber of Commerce in this connection, and pointed out this achievement as one of the advantages of having a live commercial organization in a community.

J. J. MORIARTY,
Director, Quincy Chamber of Commerce.

Influenza Patients Fed from Community Kitchen

MANISTEE, MICH.—During the recent influenza epidemic in Manistee, a community kitchen was conducted for ten days and furnished an excellent example of community coöperation. The kitchen was created and maintained thru the combined efforts of the Manistee Board of Commerce, the Red Cross and the city administration. Mrs. F. W. White, the Executive Secretary of the Social Welfare League, supervised the undertaking, and the head of the Domestic Science Department of the public schools took charge of preparing the food.

The object in establishing the kitchen was to provide soups, gruel and other easily digestible food for influenza patients who lay ill in homes where no one was able to do such cooking, and also to provide hot dishes for the nurses and well children in such families. The meals were sent out at eleven o'clock in the morning and at five o'clock in the afternoon in tin cans or pails, which were thoroly sterilized when they were brought back. The meals were delivered by a man with a team, assisted by a Boy Scout. Food was also prepared for the patients and nurses in the emergency hospital that had been established in a near-by church. Nutritious, appetizing food was provided at the lowest possible prices.

The teachers and pupils of the schools that had been closed on account of the epidemic gave valuable assistance in the work of preparing the food.

Approximately a thousand meals were sent out during the ten days that the kitchen was run, and the average cost of the supplies for each meal was less than five cents. The cost of delivering each meal was about two and one-half cents. The city paid for both the supplies and the delivery. The other expenses were slight and included gas for cooking and the use of kitchen utensils, etc. These were borne by the school district.

The nurses and doctors agreed that the service rendered to the poorer families, especially in those cases where several members of the same family had been attacked simultaneously with the disease, was invaluable.

J. C. BEUKEMA,
Secretary, Manistee Board of Commerce.

New Bulletins

Alexandria, La.—*Alexandria*, the official bulletin of the Alexandria Chamber of Commerce.

Bristol, Va.-Tenn.—*The Secretary*, a magazine for the executives of commercial and trade organizations. Published monthly by C. W. Roberts, secretary of the Southern Commercial Secretaries Association, Bristol, Va.-Tenn.

Centerville, Iowa.—*Record of Service*, the official bulletin of the Centerville Association of Commerce.

Clarksburg, W. Va.—*Onward*, the official bulletin of the Clarksburg Chamber of Commerce.

Wheeling, W. Va.—*For Wheeling*, the official organ of the Wheeling Chamber of Commerce.

Recently Issued Printed Matter

Alliance, Nebr.—The fifth annual report of the Alliance Community Club, entitled "Community Dividends," has been issued.

Atlantic City, N. J.—The 1918 year book of the Atlantic City Chamber of Commerce has been issued.

Bridgeport, Conn.—Referendum No. 2 of the Bridgeport Chamber of Commerce contains thirty questions on the year's program of work to be answered by the members.

Burlington, Vt.—A pamphlet issued by the Burlington Chamber of Commerce, entitled "The City of Lafayette and Mayo," contains twenty-one planks in its program work.

Chicago, Ill.—The annual reports of the Chicago Association of Commerce for 1918 have been issued.

Cleveland, Ohio.—The annual report of the Cleveland Chamber of Commerce for 1918 has been issued

Elizabeth, N. J.—The Water Investigation Committee of the Wilmington Chamber of Commerce has issued a report on the "Wholesomeness, Rates and Pressure of Water Served to the Citizens of Elizabeth, N J., and vicinity."

Great Falls, Mont.—The Great Falls Commercial Club has issued a booklet descriptive of the development, advancement and growth of the city of Great Falls and Cascade County.

La Crosse, Wis.—"City Plan for La Crosse" is the title of a pamphlet prepared by James R. Kinsloe, Executive Secretary of the La Crosse Chamber of Commerce.

"Selling the Chamber of Commerce of La Crosse" is the title of another pamphlet issued by the Chamber of Commerce.

La Porte, Ind.—The La Porte Chamber of Commerce has issued its year book for 1918-'19.

Los Angeles, Cal.—"What Do You Want to Know?" is the title of a pamphlet issued by the Los Angeles Chamber of Commerce telling about the activities of the organization.

McKeesport, Pa.—The April issue of *The Chamber of Commerce Record* contains a report of the McKeesport Chamber of Commerce entitled "Future, Present and Past Work."

Milwaukee, Wis.—"Land: Its Colonization—The 'Milwaukee Idea,'" is the title of a pamphlet issued by the Milwaukee Association of Commerce.

Mt. Vernon, Ohio.—"What the Chamber of Commerce Has Done" and "Places to See and How to Go" are the titles of two pamphlets issued by the Mt. Vernon Chamber of Commerce.

Newark, N. J.—"Commercial and Civic Policies" is the title of an address delivered by David Grotta, the president of the Newark Board of Trade, and published in pamphlet form by that organization.

New York City.—The Merchants Association of New York City has issued a leaflet entitled "Improvement or Decay—Which?" giving reasons for supporting the proposed treaty between New York and New Jersey for the comprehensive development of the port of New York.

Niagara Falls, N. Y.—"The Electrochemical Industries of Niagara Falls, N. Y.," is the title of a folder recently issued by the Niagara Falls Chamber of Commerce.

Poughkeepsie, N. Y.—The annual report of the Poughkeepsie Chamber of Commerce for the fiscal year 1918-'19 has just been issued.

Providence, R. I.—"The Business of Good Citizenship" is the title of a multigraphed leaflet issued by the Providence Chamber of Commerce and intended to stimulate the mental attitude of the buyer.

St. Louis, Mo.—The Industrial Department of the St. Louis Chamber of Commerce has published a "Summary of the Survey and Analysis of the St. Louis Industrial District" recently made by that department.

The annual report of the St. Louis Chamber of Commerce for the year ending December 31, 1918, has been issued.

St. Louis, Mo.—The "Report of the State Constitution Committee" of the Civic League of St. Louis gives a summary of the reasons why the constitution of the state of Missouri should be revised.

Saskatoon, Sask.—"Saskatoon, the Commercial Center of the Most Famous Wheat-growing Territory in the World," is the title of a pamphlet recently issued by the Saskatoon Board of Trade.

Tonawanda, N. Y.—"More Community Dividends, Being the Second Annual Report of the Chamber of Commerce of the Tonawandas for 1918-1919," is the title of a folder issued by that organization.

Two Rivers, Wis.—"The Report of Progress" of the Two Rivers Chamber of Commerce has been published in bulletin form.

Tyrone, Pa.—"First Three Years" is the title of a pamphlet issued by the Tyrone Chamber of Commerce containing a record of its community service.

Wilkes-Barre, Pa.—The Greater Wilkes-Barre Chamber of Commerce has issued its "Readjustment Program" for 1919.

Winfield, Kan.—The annual report of the Winfield Commercial Association has just been issued.

Woonsocket, R. I.—The Woonsocket Chamber of Commerce recently issued its year book covering the activities of the organization during the years 1917 and 1918.

Changes Among the Secretaries

A list of the recent changes and new appointments occurring among the secretaries of commercial and civic organizations thruout the United States.

Readers are asked to notify the Editors of such changes as soon as they occur, in order that the list may be made as complete as possible each month.

Frank Albus has resigned the secretaryship f the Evansville, Ind., Chamber of Commerce. le is succeeded by E. H. Hyman, secretary of ie Evansville Manufacturers' Association.

George Barron has been elected secretary of ie Lewistown, Ill., Commercial Club.

Frederick W. Bender has resigned the sec- taryship of the Rock Island, Ill., Chamber of ommerce, to enter other business.

E. D. Bevitt has resigned the secretaryship f the Jamestown, N. Y., Board of Commerce, become assistant to the president of the ational Chautauqua County Bank of James- wn. He is succeeded by Major A. Bartholdi eterson, late Intelligence Officer on the staff f Major-General O'Ryan of the 27th Division. efore enlisting in the U. S. Army, Major eterson served as Probation Officer at James- wn.

B. A. Blakeney is the new secretary of the hamber of Commerce at Grand Haven, Mich.

Earl C. Brandeberry is the new secretary f the Albany, Ore., Chamber of Commerce.

A. L. Chavannes has been elected manager f the reorganized Board of Commerce at noxville, Tenn.

Harry D. Conover has been elected secretary f the Trenton, N. J., Chamber of Commerce, cceeding George H. Mosser. Miss Lucy A. arnam has been elected assistant secretary.

George Danser has been elected secretary f the Petoskey, Mich., Chamber of Commerce.

Sidney A. Edwards has been elected man- ger of the newly organized Chamber of Com- erce at Mahanoy City, Pa. Mr. Edwards as formerly assistant secretary of the Meri- n, Conn., Chamber of Commerce.

E. W. Estes has tendered his resignation as cretary of the Thirty-Fourth Street Board of rade of New York City, to become a district les manager for the Federal Adding Machine orporation.

William G. Ferguson, formerly managing litor of the *Daily Missoulian* at Missoula, ont., has been elected secretary of the Miles ity, Mont., Chamber of Commerce, succeed- g H. M. Robinson, deceased.

R. C. Freitag has resigned the secretaryship f the Chamber of Commerce at Pontiac, Ill. e is succeeded by F. W. Mozart.

G. H. Fuller is the new secretary of the ommercial Club at Conde, S. Dak.

James E. Gheen has been elected secretary the Bethlehem, Pa., Chamber of Commerce. Mr. Gheen was formerly associated with the Bethlehem Steel Corporation.

Major Byres H. Gitchell has been appointed Labor Manager of the American Men's and Boys' Clothing Manufacturers' Association. Major Gitchell was for several years secretary of the Detroit Board of Commerce. During the war he served in the office of the Secretary of War, and occupied also the positions of Chief of the Industrial Service of the Ordnance Department and of the Industrial Relations Department of the Bureau of Aircraft Production.

James G. Hammond, formerly secretary of the New London, Conn., Chamber of Commerce, has been elected manager of the reorganized and enlarged Chamber.

T. N. Herring has been elected secretary of the Cameron, Tex., Commercial Club.

Frank Howard is the new secretary of the Commercial Club of McMinnville and Warren County, with headquarters at McMinnville, Tenn.

Clifton D. Jackson, of Detroit, has been elected secretary of the Springfield, Mass., Chamber of Commerce, succeeding George E Foss.

Rufus Jones has been elected secretary of the Alliance, Nebr., Community Club, succeeding W. D. Fisher, who has accepted the secretaryship at Sheridan, Wyo.

Clarence C. Killen has resigned the secretaryship of the Wilmington, Del., Chamber of Commerce, to become assistant business manager and treasurer of The Evening Journal Publishing Company, of Wilmington. William T. Budd has been appointed to succeed him.

Warren T. King, formerly secretary of the Camden Public Service Bureau, Camden, Ark., and recently discharged from the U. S. Army, has been elected secretary of the Chamber of Commerce at Greenwood, S. C.

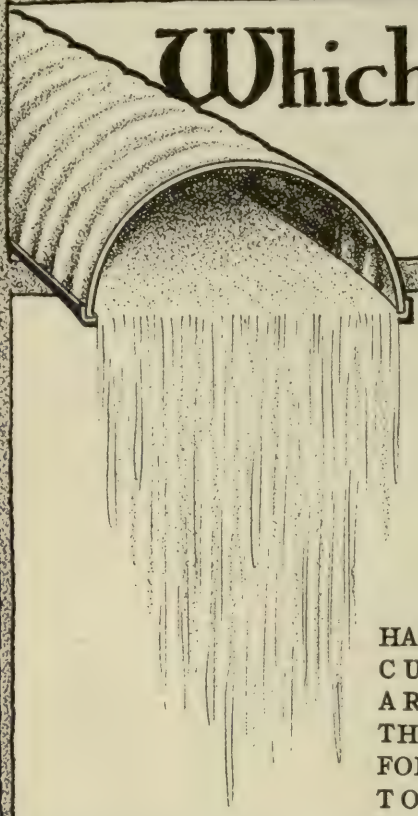
A. J. Knapp has tendered his resignation as secretary of the Waterloo, Ia., Commercial Club, to become secretary of the Iowa Motor Trades Bureau in Des Moines.

Captain Archie E. Lang has resigned the secretaryship of the Lawton, Okla., Business Men's Club.

D. T. Meek has been selected as the new secretary of the Enid, Okla., Chamber of Commerce.

G. P. Montrastelle has been appointed assistant secretary of the Board of Trade at New Brunswick, N. J. Mr. Montrastelle was for-

Which type of Culvert do you prefer ?



WE make the Half-Round type of culvert from "Genuine Open Hearth Iron" and they can be readily used when the fill is not sufficiently heavy to permit the use of the right size of round riveted pipe for the capacity needed. The bottom sections can be had in lengths of 6, 8 & 10 feet, thereby giving a more rigid culvert than if the bottom were made of shorter sections. The top sections on the other hand are made in multiples of two feet.

HALF ROUND CULVERTS ARE JUST THE THING FOR CITY OR TOWN USE



ROUND Riveted Full Circle Corrugated Metal Culverts have come into almost universal use all over the country. Their value is well understood for general use on main highways; they are the best and are invaluable on secondary roads where the service demanded is much greater. Corrugated metal culverts made of any grade of material, are much more easily handled and installed than any other form of culvert construction; but where permanency has to be considered, it is well to have them of the best grade galvanized iron sheets that are on the market. Our "Genuine Open Hearth Iron" is the best. Send us your address so we can send you further particulars.

The Newport Culvert Company

NEWPORT 524 West 10th St. KENTUCKY

ierly connected with the Home Defense eague of New Brunswick.

L. W. MOORE is the new secretary of the hamber of Commerce at Alva, Okla.

RALPH MORGAN has been appointed assist-nt secretary of the Chamber of Commerce at haron, Pa.

EVERETT NELSON has been elected secretary f the Commercial Club at Perry, Okla.

IRVING C. NORWOOD, formerly secretary of ie Bethlehem, Pa., Chamber of Commerce, as been appointed Regional Director of Com-nunity Service, Inc., with headquarters at hicago.

C. A. OAKES has resigned the secretaryship f the Malone, N. Y., Chamber of Commerce, o become manager of the Malone Mercantile gency.

LIEUT. EDWARD O'CONNOR, of Iowa City, has een elected secretary of the Storm Lake, Ia., ommercial Club.

H. G. OLMSTED has been elected secretary of ie Chamber of Commerce at Newkirk, Okla.

ARTHUR W. PHINNEY, former City Clerk and ssistant State Fuel Administrator, has been hosen as the new secretary of the Manchester, I. H., Chamber of Commerce, succeeding . W. Patman, resigned.

SUMNER M. RAMSEY, editor of the Amarillo *Daily News* and the *Daily Panhandle*, has een chosen as the new secretary of the Board f City Development of Amarillo, Tex.

H. M. RAYMOND is the new secretary of the dgerton, Wis., Chamber of Commerce.

W. A. ROBERTS has been selected as the new secretary of the Chamber of Commerce of Waxahachie, Tex., succeeding Talmage E. Newton, who resigned to enter the real estate business.

LEONARD L. SAUNDERS, County Clerk, has been elected secretary of the reorganized Chamber of Commerce at Oneida, N. Y.

CARYL SPILLER has resigned the secretaryship of the Adrian, Mich., Chamber of Commerce, to become director of the Toledo Americanization Board of Toledo, Ohio.

B. N. SUBLETTE, of Louisville, Ky., has been elected secretary of the Loveland, Colo., Chamber of Commerce.

J. C. VANT HUL, JR., has resigned the secretaryship of the Webster City, Ia., Chamber of Commerce, to accept the position of executive secretary of the Clinton, Ia., Commercial Club.

O. C. WAREHIME has resigned the secretaryship of the Frederick, Md., Board of Trade. Lewis R. Dertzbaugh has been chosen as his successor.

H. WESTOBY has been elected secretary of the new Chamber of Commerce at Guelph, Ont.

E. S. WILSON has been selected as the new secretary of the Mexico, Mo., Chamber of Commerce.

JEROME WORKMAN has resigned the secretaryship of the Chamber of Commerce at Eugene, Ore. He is succeeded by W. F. Gilstrap, former manager of the *Morning Register* of Eugene.

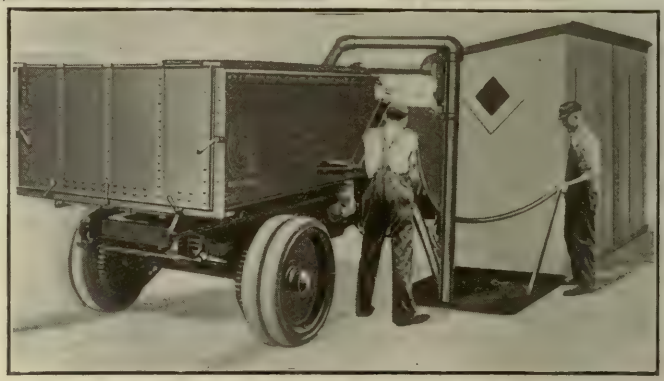
The Janesville Housing Plan

By Frank J. Green
Manager, Chamber of Commerce, Janesville, Wis.

GETTING a city ready to absorb an increase in its population of from three hundred to four hundred per ent in a period of a few years is a dif-cult task at best, but when that city has a opulation of only about 14,000 to start vith, and no provision whatever for such apid increase has been made, the task be-omes one of great magnitude.

Janesville found it necessary to take an nventory of itself when the Samson Trac-or Company, a unit of the General Motors Corporation, located in the city. The in-entory showed that Janesville was abso-utely unprepared to house probably fifty housand people within five years at the urrent rate of building operations. The Chamber of Commerce, recently organized as successor to the old Commercial Club, quickly sensed the situation, and last August began a study which resulted in the formation of the Janesville Housing Plan. This was submitted to the Chamber's Personnel Committee in November, which approved it in its entirety. The Personnel Committee was made up of representatives of every live interest in the community, and included the officers and directors of the Chamber of Commerce, certain of the city officials, the Superintendent of Schools, representatives of the banks and of the various civic organizations, business men identified with the building trades, real estate agents, etc.

Remember this—



The Otterson Auto Eductor

is a quick, dependable, economic, cleaning equipment suitable for

Cleaning Catch Basins

The old filthy, costly, laborious hand-method is gone from up-to-date cities. The Otterson Eductor retains the debris in the body of the machine, and does the whole job quickly.

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All contents removed without nuisance in the quickest possible time, at low cost. Small cities and towns can take care of all privy vaults in town with an Otterson Eductor, saving time and money.

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In sandy soils, where water and quicksand enters sewer or water pipe trenches, the Otterson Eductor can remove the water, not simply pumping it over the top to run in again, but removing it in the tank body of the machine.

EQUIPMENT MOUNTED ON ANY 5-TON CHASSIS OF SUITABLE STANDARD MAKE

THE OTTERSON AUTO-EDUCTOR COMPANY

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The three main objects of the housing plan were, first, to provide substantial and attractive homes for the working people upon such terms as would enable them to live comfortably at a moderate cost; second, to aid manufacturing concerns already established to increase their force by providing sufficient housing to take care of the increase; and third, to encourage and foster the making of improvements on land and buildings in such a way as to cause the city to grow substantially as well as rapidly.

The Chamber's study of the subject revealed the fact that local contractors and private builders could be depended upon to supply houses for those desiring to pay $3,500 or more for them. The greatest demand would be for houses costing less than $3,000, particularly for the type of dwelling required by the laboring class. The study embraced a comprehensive investigation of the economics of the community, and the problem was to create an organization that would fully conserve the interests of the workingman and his family and give him the utmost in house value.

The outcome was a decision to form the Janesville Housing Corporation, to be capitalized at $300,000. The plan was submitted to the president of the General Motors Corporation, W. C. Durant, who agreed to subscribe for $100,000 worth of the stock. Janesville immediately bestirred itself to raise the balance. Thru a committee of the Chamber, a quiet campaign was put on to secure the funds. This was followed by an intensive drive conducted for three days by a committee of forty-six men, who secured subscriptions for the necessary amount. Forthwith came a check from Mr. Durant for $100,000. The stock of the corporation was taken by 346 of Janesville's citizens, so that the enterprise is a purely local one.

The educational part of the campaign included talks before all the organized bodies of the city, such as the civic, fraternal and church organizations. The reaction from these was very noticeable when the intensive campaign was put on. The facts in the case were frankly stated, and an understanding was had with the owners of real estate that they would sell their holdings at fair and equitable prices. The folly of profiteering was emphasized. An Appraisement or Booster Committee was formed, with the City Assessor as one of the members, whose object was to inspire in the real estate owners a sense of civic duty which would lead them to dispose of their property at reasonable prices. The leaders of the movement did not wish to be obliged to go out of the city for land because it might be cheaper, but preferred to build within the city.

On March 19, 1919, the stockholders of the housing corporation met and elected their directors; on March 22 the directors named their officers, and on March 26 the directors engaged a firm of architects to prepare immediately the plans and specifications for the first unit of fifty dwellings.

The corporation will build houses only for sale, to be purchased on monthly payments based on one per cent of the cost of the property. For instance, a house and lot costing $2,000 may be acquired by paying $20 a month until the property is paid for. A portion of each payment will be used to defray the cost of carrying the property, and the balance will apply on the second mortgage, which will be held by the corporation. This plan is equivalent to paying rent, but enables the occupant eventually to become the owner of the property, and will result in Janesville's becoming largely a city of home owners. The idea has been generally approved because of the greatly increased rentals of the few dwellings that are now available for renting purposes.

The corporation expects to be able to pay at least six per cent dividends. The company is not organized on a limited dividend basis.

A further development of the housing movement was the decision that Janesville should have a city plan. This was considered absolutely necessary if the building operations and other city development work contemplated were to be carried out along sound, constructive lines, looking far into the future. The Chamber of Commerce appointed a committee to investigate the matter, later approved its report, and shortly thereafter engaged the services of Dr. John Nolen to prepare a comprehensive city plan and zoning law. The Chamber bore the expenses of this work.

Janesville is now prepared to meet any housing emergency that may arise in the future.

Roads five years old that are almost as good as new—

When roads come through more than five years of service in as fine condition as the two illustrated herewith (both of which were built in 1913), you begin to appreciate the truth of the statement, made so often in connection with Tarvia, namely:

That while the original cost of a tarvia-macadam road is a little more than an ordinary water-bound macadam road, the tarvia-macadam is much *cheaper in the end* because of its *long service and very low maintenance cost.*

Plain macadam construction is no longer strong enough for boulevards and highways. Under the grinding, prying, driving wheels of heavy automobiles it quickly begins to ravel and "goes to pieces" in short order.

But a macadam road constructed with "Tarvia-X" as a binder will stand up under heavy motor traffic.

A Tarvia roadway is not only durable but mudless, dustless and water-proof.

Existing plain water-bound macadam roads that are just beginning to ravel can usually be saved and made to serve a long time by treating them promptly with the proper grade of Tarvia. In fact, there are few road problems that Tarvia will not solve—and solve *economically.*

Booklet on request



At top—Photograph of main highway to residence of Mrs. W Young, Bay City, Mich. "Tarvia-X" penetration method use binder.

The reproduction at the bottom shows a section of Carroll Boulevard, Bay City, Mich. "Tarvia-X" penetration method with excellent results.

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Commission-Manager Plan Strongly Endorsed

Timely Warnings Found in Replies to Questionnaire

By David J. McKenna
Mayor, Englewood, N. J.

TO secure first-hand information as to how the city-manager plan of municipal government has actually worked out, the city of Englewood, N. J., wrote last summer to 25 cities, ranging in population from 8,000 to 60,000, all of which were reported to be operating under the new form. The questionnaire took the form of three letters, one to the Secretary of the Chamber of Commerce, where such organization existed, one to the Superintendent of Schools, and one or two to business firms selected at random. The replies, altho quite frank in pointing out errors and dangers which may be met in the operation of the plan, on the whole constitute one of the strongest endorsements of it yet recorded. Those cities having full commission-manager charters seem to have had better results than those which have provided "near-manager" plans by ordinance or resolution of the local council.

The questionnaire contains ten inquiries, seven of them questions of fact and three matters of opinion. There was more variance in the replies to the former than to the latter, for the opinions constitute an almost unanimous expression of approval. Altho three letters from the same city disagreed as to the Manager's salary and his term of office, the writers struck common ground when asked whether the new plan is an improvement over the old.

Of the 25 cities from which replies were received, 17 have full commission-manager charters granted by the state and adopted by vote of the citizens, 2 have quasi-manager charters in which some essential features are lacking, 5 have city managers appointed as a result of ordinances locally adopted, and one had no city manager. This last, Titusville, Pa., tried out a "near-manager" plan for a short time by giving the borough engineer additional duties and calling him "managing-engineer," but the experiment failed.

In answer to the question, "Have operations under the manager-plan been more efficient and more economical than under the former system employed?" 42 replies from 19 cities having commission-manager charters yielded 40 affirmative answers and 2 non-committal; 10 replies from 5 cities where the managers hold office by virtue of an ordinance yielded 8 affirmative, 1 non-committal and 1 negative.

To the question, "Have general conditions improved under the manager system over what they were prior to the employment of a manager?" 19 charter-plan cities gave 42 answers, all affirmative. From the ordinance-plan cities came 9 replies, of which 7 were affirmative and 2 negative.

In the following report the cities are arranged according to plan and size, the population estimate being an average of the replies received. Known errors in statistics have been corrected. The comments made are direct quotations, abbreviated in some instances, but no significant remark either pro or con has been omitted. All told, 55 answers were received. The names of those who made the replies are omitted, but may be obtained upon inquiry. The salient features of the plan under which each of the cities in question operates may be found in THE AMERICAN CITY symposiums, together with the biographies of the managers. Achievement reports from the managers may be found in the year books of the City Managers' Association.

The replies were as follows:

Commission-Manager Cities

HIGH-CLASS MEN ON COMMISSION

SPRINGFIELD, OHIO.—60,000.—Commission-manager charter, effective January 1, 1914. Manager appointed by commission for indefinite period; salary, $6,000.

Operations more efficient and economical?

1. "They have been more efficient and economical because we have the most capable men in town on our commission."
2. "Undoubtedly *yes.*"
3. "They have undoubtedly been both. We have never before in the 37 years I have lived in the city had such clean and efficient city government and so much for our money."

General conditions improved?

1. "They certainly have, as all our citizens will testify."
2. "Yes."

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Detroit Superior Bridge, Cleveland, Ohio—Waterproofed by The Minwax System

THE cost of waterproofing a bridge or other structure, by the Minwax System, is never more than a very small fraction of the cost of construction. But it may add 50 years to the life of the structure. Can any one question the value of such an investment—remembering that Minwax gives Permanent Protection? Send for Bulletins 11, 12, 13 and 14.

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Chicago Pittsburgh Cleveland Detroit Baltimore Cincinnati
Portland Seattle San Francisco Los Angeles

3. "They have, both in the way of moral conditions and law enforcement, and also notably in the way of financial management. We are getting more on less money and paying off a large floating debt existing when the new system started."

Comments:

1. "The success of this form of government here was without doubt due to the fact that the best citizens of the city got behind the candidacy of five business men, four of them men of large business interests, and one a long-headed man of intelligence and integrity from the labor class, and elected them. Since then politics has never been an issue in the election of commissioners."
2. "There is more general satisfaction with the commission government here after nearly five years than I have known in Springfield with any civic affair in a generation."

ADVISE ADOPTION ELSEWHERE

NIAGARA FALLS, N. Y.—56,000.—Commission-manager charter by special act of Legislature and referendum, effective January 1, 1915. Manager appointed by commission; term indefinite; salary, $5,000.

Operations more efficient and economical?

1. "Yes." 2. "Yes."

General conditions improved?

1. "Yes." 2. "Yes."

Comments:

"We believe your city will improve by good commission [manager] form of government."

VERY MUCH MORE EFFICIENT

JACKSON, MICH.—45,000.—Commission-manager charter, effective January, 1915. Manager appointed by commission for indefinite term; salary of present manager, $4,000. Salary of first manager, $3,500. Second started at $5,000; raised to $6,000, then to $7,500.

Operations more efficient and economical?

1. "Very much more efficient. Hard to compare with former system as to economy, owing to steadily rising cost of everything during the past three years. We believe, however, that we are saving money."
2. "We find it so."
3. Taxes are higher, but we seem to get the money spent as it should be."

General conditions improved?

1. Yes, decidedly." 2. "Yes, they have improved wonderfully." 3. "Yes."

Comments:

1. "The commission-manager form of government is splendid in theory. In practice it is no better than the men who run it. Up to date we have been fortunate in having high-grade men on the commission and as managers."
2. "Conditions are very much better. Have put down more pavement since commission came in than we had before. Water system is in much better shape, and police force is out of politics."

POLITICS ELIMINATED

SAN JOSÉ, CAL.—40,000.—Commission-manager charter, effective July, 1916. Manager appointed by council and serves at its pleasure. Salary, $6,000.

Operations more efficient and economical?

1. "More efficient, and has eradicated politics. Not much more economical as far as costing less, but we are getting better results for money expended."
2. "Yes, in every respect."

General conditions improved?

1. "Very much indeed."
2. "Yes. City's business, for the first time in history, is conducted systematically, on a cash basis. By civil service, all politics have been eliminated."

Comments:

"We are quite sure this kind of government is going to work out fine."

MANAGER MUST HAVE TACT

PHŒNIX, ARIZ.—25,000.—Commission-manager charter, effective April, 1914. Manager appointed by commission and serves at its pleasure. Salary, $5,000.

Operations more efficient and economical?

1. "Yes." 2. "Very questionable."

General conditions improved?

1. "Yes." 2. "Yes. Conditions in city are better, but as much from state laws as anything else."

Comments:

"When our charter providing the manager form of government for our city was adopted, it provided that the manager be independent of the commission; . . . . . an amendment to the charter places the manager under the commission. At the present time we happen to have a very good manager, and things are moving along very well."

HIGHER-PRICED MANAGER CHEAPER

AMARILLO, TEX.—20,000.—Commission-manager charter, effective December, 1913. Manager appointed by commission for term of two years (same as commissioners). First manager's salary, $2,500; second, $1,800; third (appointed since below reports were received), $2,500.

Operations more efficient and economical?

1. "Yes." 2. "Yes."

General conditions improved?

1. "Yes." 2. "Yes."

Comments:

"The first manager we had was paid $2,500 per annum. The next administration sought to economize, and hired one at $1,800. The higher-priced man proved the cheaper."

BEST-MANAGED CITY IN STATE

SHERMAN, TEX.—18,000.—Council-commission-manager charter, providing for a council of 15 which chooses from its members a commission of 3, which appoints the manager, effective April, 1915. Salary, $3,600.

Operations more efficient and economical?

1. "I think so." 2. "Yes."

Operations more efficient and economical?

1. "Yes." 2. "Yes."

Comments:

1. "The general opinion is that this is a great improvement over the old aldermanic form."
2. "I can say that Sherman is the best-managed city of any in the state, so far as my observation goes, and I have opportunity to watch nearly every city in the state."

RESULTS DEPEND ON ABILITY AND CO-OPERATION

BAKERSFIELD, CAL.—17,000.—Commission-manager charter, effective April, 1915. Manager appointed by commission for indefinite term. Salary, $3,000.

Comments:

"I believe the principle of management by a paid manager is right, but the results depend entirely on the business ability of the manager and on the kind of backing he has by the councilmen."

MORE BUSINESSLIKE AND WILL IMPROVE

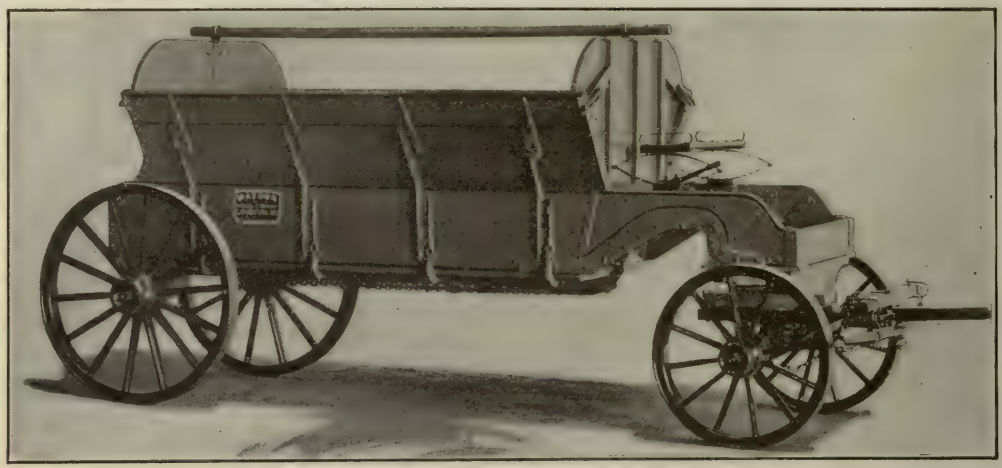
TYLER, TEX.—15,000.—Commission-manager charter, in effect April, 1915. Manager serves during term and at pleasure of commissioners, who appoint him. Salary, $3,000.

Operations more efficient and economical?

1. "Both, by far." 2. "Yes, and will be more satisfactory in a few years."

General conditions improved?

1. "Very much improved under manager. Affairs are administered in a more businesslike way."
2. "We think so."



TYPE OF WATSON ASH WAGON USED BY NEWARK, N. J.

For Hauling Ashes and Road Building Materials Watson Dump Wagons

are giving splendid service to many municipalities and counties. Watson Dump Wagons are the favorites with many of the best known city and county engineers, contractors and others having to do with grading and road building work in all parts of the United States.

The non-sagging bottoms are an important feature. The bottoms overlap and stay tight.

Notwithstanding the fact that Watson Wagons are lighter than equal capacity wagons of other makes, they stand the wear and tear of rough hard service or the terrific pounding of a steam shovel if necessary.

What is the reason for this superior service? It is the result of Watson design, Watson construction, Watson workmanship, and Watson materials, all the best of their kind.

In addition to Watson Dump Wagons we also make a full line of trailers, semi trailers and tractors. No matter what your hauling problem is, you will be interested in our illustrated catalogs which will be sent free of charge on receipt of your address.

Watson Wagon Company

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Comments:

1. "The system is decidedly advantageous, and will be generally satisfactory as soon as ward politicians, etc., pass out."
2. "The city manager plan is more economical."

EFFORT TO ABOLISH PLAN FAILS

San Angelo, Tex.—15,000.—Commission-manager charter, in effect April, 1916. Manager appointed by mayor with approval of commissioners; term indefinite; salary, $2,500.

Operations more efficient and economical?

1. "Yes." 2. "Far more efficient and economical." 3. "Yes."

General conditions improved?

1. "Yes." 2. "Yes." 3. "Yes."

Comments:

1. "Our system is the best we have had since I have been here, 14 years. In my judgment it is the best for municipalities. It has made good with the people. At the last election, the anti-commission candidate got 53 votes, and a recall of the manager system asked for by him and others was turned down by a good vote at a separate election."
2. "We have just had an election, called by a few disgruntled citizens, asking that the city management be done away with. They were defeated at least three or four to one, without any especial work by those interested in the city management or commission."
3. "A majority of the most enterprising citizens like it. It is true we have a few disgruntled elements, 'kickers' at anything."

FAR AHEAD OF OLD SYSTEM

Brownsville, Tex.—13,000.—Commission-manager charter, in effect January, 1916. Manager appointed by commission by the year; salary, $3,000.

Operations more efficient and economical?

"Both more efficient and economical."

General conditions improved?

"Most decidedly so."

Comments:

"There is no question in my mind that the manager system is far ahead of the old council-and-mayor system. No private enterprise could possibly survive if run by 10 or 12 men and no executive head, and the same thing applies to a municipality."

GREAT SUCCESS HERE

Alpena, Mich.—13,000.—Commission-manager charter, in effect April, 1916. Manager appointed by the commission; term indefinite; salaries from $1,800 to $2,500.

Operations more efficient and economical?

1. "Yes." 2. "It is much better."

General conditions improved?

1. "Yes." 2. "It has been a big improvement and saving to the city."

Comments:

"Commission form of government is a great success here."

TAXES AND DEBT REDUCED—INVESTMENTS INCREASED

Manistee, Mich. — 12,000. — Commission-manager charter, effective May, 1914. Manager appointed by commission; term indefinite; salary, $2,500.

Operations more efficient and economical?

1. "Yes." 2. "Yes, decidedly so."

General conditions improved?

1. "Yes." 2. "Yes, decidedly so."

Comments:

1. "We are well satisfied with this form of city government. There is more efficiency, less taxes, and general conditions have improved."
2. "During the period 1913 to 1918, $37,550 was spent for buildings, grounds and fire equipment, as against none in the period 1910 to 1913. City tax rates per $1,000:

1912	1913	1914	1915	1916	1917
$16.84	$16.12	$14.57	$13.51	$13.05	$17.90

Bonded debt decreased from $275,000 to $214,000."

NOT LOW PRICE, BUT SERVICE

Sumter, S. C.—10,000.—First commission-manager charter, effective January, 1913. Manager appointed by commission for indefinite term. Salaries have ranged from $1,200 to $3,600. Present salary, $1,500, "which is insufficient."

Operations more efficient and economical?

1. "More satisfactory in every respect."
2. "Yes."

General conditions improved?

1. "They certainly have." 2. "Yes."

Comments:

1. "There have been more city improvements under this system in the last five years than ever during the previous history of the city."
2. "Some of the accomplishments which we feel are largely due to the commission form of government are:

The installation of a modern and comprehensive accounting system
The yearly audit of all accounts
The lowering of interest rate of money borrowed by the city from 7 per cent to from 3½ to 4½ per cent
The creation of adequate sinking fund accounts to take care of outstanding bonds at their maturity
The installation of a sanitary surface closet system for outlying districts not reached by the sewer system
The extension of water mains, sewer and storm drains out of the ordinary income of the city
The building of eight to ten miles of improved paved streets at the lowest cost on record in the South for work of this character
Our rate of taxation has not been lowered—it has increased—but we get more for each dollar spent
The modernizing of our fire-fighting equipment
The passage of a building code that will prevent fire waste and reduce insurance rates
A reduction in the operating expenses of our waterworks system, and at the same time getting a more ample and dependable supply of water
The creation of a park
The eradication of shade trees with an objectionable root system development, supplanting these with the more desirable varieties
Encouraging the seeding of parkway plots by property owners

POLITICS MAY CREEP BACK

Cadillac, Mich. — 10,000. — Commission-manager charter, effective March, 1914. Manager appointed by commission for two-year term. Salary has ranged from $3,000 to $1,800; $2,200 at present.

Operations more efficient and economical?

1. "Yes." 2. "Yes." 3. "Yes."

General conditions improved?

1. "They have." 2. "Yes." 3. "Yes."

Comments:

1. "There was some politics mixed in last fall, and things are not quite so smooth as they should be, as the commissioners have some of our heavy taxpayers opposed to the way our present manager was put into the work."
2. "While it is as expensive or even more so than was the old system, yet we have better administration of affairs in all directions. Less politics, yet not entirely free from them. We have a cleaner and more efficient administration than ever before. Personally, I am in favor of the manager system."
3. "The commission form of government does away with ill feeling at election time, and there are very few political plums to hand out. We like it very much."



Sanitary Garbage Collection Is a Municipal Asset

A close-covered and watertight garbage wagon prevents the spread of filth and disease. A good wagon will not leak or spill the garbage, and a tight cover keeps the flies away.

Studebaker Garbage Wagons and Carts meet these requirements.

Write for full particulars and descriptive literature regarding the complete line of Studebaker Municipal Vehicles.

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DANGER IN POLITICS AND CHEAP MANAGER

ELIZABETH CITY, N. C.—10,000.—Commission-manager charter, effective April, 1915. Manager appointed by council for two years. Salary at first, $1,800; now $1,200.

Operations more efficient and economical?

"Yes, for the first two years. Saved the city more than $20,000 and had a lot of new work done."

General conditions improved?

"Very much for the first two years, and would be all right now but for the fact that the city manager was inexperienced, the second one appointed; he does not seem to have a free hand."

Comments:

"Commission form with city manager worked well for two years, but it is now in politics and does not prove so satisfactory. For the first two years it was highly satisfactory, but the politicians turned out the manager and put in a man who had no experience, for less salary, and it is not satisfactory. The city manager plan is the best I know of, if the council will employ a man out of politics and not employ one that they hope to handle."

MANAGER PLAN FIXES RESPONSIBILITY

ALHAMBRA, CAL.—9,500.—Commission-manager charter, effective July, 1915. Manager appointed by commission; term indefinite; salary, $2,500.

Operations more efficient and economical?

1. "Universally considered more efficient and more economical."
2. "Manager plan is very much more efficient and economical."
3. "Yes."

General conditions improved?

1. "They have. Responsibility for all acts is fixed."
2. "General conditions are much better, as our taxes will show."

Quasi-Manager Charters

GOOD RESULTS EVEN WITH FAULTY CHARTER

CHARLESTON, W. VA.—35,000.—A mayor-council-manager charter, effective May, 1915. Manager appointed by the mayor for a two-year term. Salary, $3,300.

Operations more efficient and economical?

1. "Yes." 2. "It is generally conceded that the new system is a great improvement over the old."

General conditions improved?

1. "Yes." 2. "They have."

Comments:

"On the whole, the experiment has been satisfactory. It delegates too much power to the mayor, many of his appointive offices not being subject to confirmation by the council, and the success of the whole scheme, as is true with any form of government that approaches a limited monarchy, depends largely on the integrity of the officer in whom the main power is vested. Our officials under the new system have been of a higher class than the cheap politicians who flourished under the old régime. Our council is large to the point of clumsiness, and the general opinion is that a smaller body would be equally representative and more efficient in its work."

A SAVING IN ALL DEPARTMENTS

NORWOOD, MASS.—13,000.—Town-manager charter, effective January, 1915. Manager appointed by Board of Selectment for indefinite term. Salaries have ranged from $3,000 to $3,600.

Operations more efficient and economical?

1. "Yes."
2. "There is no question but what there has been a saving in all departments."
3. "Those who favored the charter plan would say yes; those who opposed would say no."

General conditions improved?

1. "Yes."
2. "General conditions have improved under the manager system."
3. "I would say yes."

Comments:

"We engaged our first manager at $3,000, and later gave him $3,500. He made good from the start, and was later taken on at $5,000 by a larger city. We are now under our second manager, who is also very satisfactory."

2. "Of course it was quite a step to take, and some of the older citizens were opposed to any change in the town management, but I think they see that it is working out well at the present time."
3. "Yes."

Comments:

1. "From my observation of the mayor-council system, the pure commission system (as organized in Pasadena) and the commission-manager system in Alhambra, I am convinced that the elimination of petty politics and the fixing of responsibility is best accomplished in the commission-manager form of municipal government."
2. "I think it by far the best plan in which to run a city government for a city near our size."
3. "Results of city-manager form:
   - Centralized responsibility
   - Closer relations between citizens and government
   - Immediate attention to all demands of the public
   - Reduced expenses
   - Increased revenues
   - Intelligent consolidation of offices
   - Eliminates politics
   - Adequate returns for all money spent
   - Greater publicity in all city affairs
   - Greater interest by citizens in civic affairs"

Manager-Plans by Local Ordinance

TEN-YEAR TEST SATISFACTORY

STAUNTON, VA.—12,000.—Position of general manager created by ordinance of council January, 1908. No charter change. Manager appointed by council; term, two years; salary, $2,400.

Operations more efficient and economical?

1. "Yes." 2. "Yes."

General conditions improved?

1. "Yes." 2. "Yes."

Comments:

"The manager looks after work previously entrusted to committees of the council. Work is done more promptly, more economically and more efficiently."

CANNOT ENDORSE HALF-WAY PLAN

CHARLOTTESVILLE, VA.—12,000.—Old mayor-council-aldermen plan, with manager's position created by ordinance August, 1913. Manager's term two years; salary, $1,800.

Operations more efficient and economical?

1. "Yes."
2. "We must say we do not see much, if any, improvement."

General conditions improved?

1. "Yes." 2. "We don't see much difference."

Comments:

1. "Altho we have gotten better results under the present plan, on the whole we cannot endorse it. The city manager's hands are more or less tied by the mayor-and-council form of government. We are hopeful of finally securing a full commission form."
2. "Times have been so unusual, labor so very scarce, material much higher, we hardly think that the city manager has had a fair test."

ORDINANCE PLAN NOT SATISFACTORY

GLENDALE, CAL.—12,000.—Position of manager created by Board of Trustees' ordinance May, 1914.

FEDERAL

One to Five Ton Capacities

Federals Keep Salt Lake Traffic Moving

Business traffic on the down town streets of Salt Lake City is never seriously impeded during the winter months, in spite of a heavy annual snow-fall in that district.

The main reason for the rapid cleaning of the city's streets after a storm is pictured below. The huge capacity of this Federal truck and its trailer, plus the speed with which the loads are disposed of, assure Salt Lake City of well cleaned streets every morning in plenty of time for the heavy traffic of the day.

This is but one of hundreds of uses for motor trucks in every city's administration. Those cities which have chosen the Federal have been especially well pleased at the low up-keep cost and the reliability of this sturdy truck. Do not purchase, without investigating the Federal.

A monthly magazine—Traffic News—containing interesting stories of haulage, will be sent upon request.

FEDERAL MOTOR TRUCK COMPANY
34 FEDERAL STREET DETROIT, MICH.

The Street Department of Salt Lake City makes quick work of its heavy snow haulage with this Federal.



"Shorten the miles to market—build better roads."

No charter change. Manager's term reported as one year; salary, $2,400.

Operations more efficient and economical?
1. "Yes." 2. "Not in my estimation."

General conditions improved?
"I do not think so, altho the manager has given a great deal of time to streets and like improvements with good results."

MANAGER HAMPERED BY LACK OF AUTHORITY

JOHNSON CITY, TENN.—11,000.—Old mayor-and-council form, with position of manager created by ordinance of common council, July, 1909. Term two years; salary, $1,500.

Operations more efficient and economical?
1. "Yes." 2. "Yes."

General conditions improved?
1. "Yes." 2. "Yes."

Comments:
"The city mantger has never had the authority intended under our plan; really a surveyor or engineer, acting for the Board and entirely subject to their orders. He should be a high-class business man with full authority, if you wish results."

EXCELLENT RESULTS DESPITE LIMITED POWER

ROSWELL, N. MEX.—8,000.—Manager's position created by ordinance of the council, effective May, 1914. Term two years; salary, $2,400. Manager appointed by mayor and council.

Operations more efficient and economical?
1. "Yes." 2. "Yes, most decidedly."

General conditions improved?
1. "Yes."
2. "Yes. The city has been put into good shape. Streets, sewers, etc., are kept clean and sanitary."

Comments:
"The more competent the man, the better the results. The council can give more power."

Growth of the City Manager Movement

The List Up to Date

In the January issue of THE AMERICAN CITY appeared a list of city manager cities. The following corrections and additions will bring that list up to date, so far as our information permits. The three cities marked "omit" have discontinued temporary manager plans created by local ordinances; those headed "corrections" indicate recent changes in the city managership; while "additions" are new cities reported, with the exception of Clarinda, Ia., which should have appeared in our original list:

Omit

Huntington Beach and San Rafael, Cal.; Grinnell, Ia.

Corrections

Cynthiana, Ky.	J. J. Curle
Auburn, Me.	E. A. Beck
Big Rapids, Mich.	Dan H. Vincent
Birmingham, Mich.	Morice Lowman
Otsego, Mich.	Gerard A. Abbott
Petoskey, Mich.	James E. Niles
Newburgh, N. Y.	James Miller
High Point, N. C.	R. L. Pickett
Mangum, Okla.	R. B. Snell
LaGrande, Ore.	John Collier
Brownwood, Tex.	E. R. Brashear
Taylor, Tex.	A. V. Hyde
Yoakum, Tex.	*vacant*

Additions

Redding, Cal.	E. A. Rolinson
Cartersville, Ga.	A. Cook
Clarinda, Ia.	T. A. Wilson
Hays, Kans.	James C. Manning
McCracken, Kans.	effective April, 1919
Lapeer, Mich.	Ray S. Blinn
Portland, Mich.	F. L. Jenkins
McAlester, Okla.	effective July, 1919
Eastland, Tex.	Walter Lander
Electra, Tex.	effective May, 1919
Bristol, Va.	effective Sept., 1919
Suffolk, Va.	effective Sept., 1920

Charter Changes

CARTERSVILLE, GA.—The city of Cartersville is operating under the manager plan. The city charter was amended in August, 1917, so as to provide for the position of city manager. The manager acts as administrative head of the city government and need not be a resident of the state.

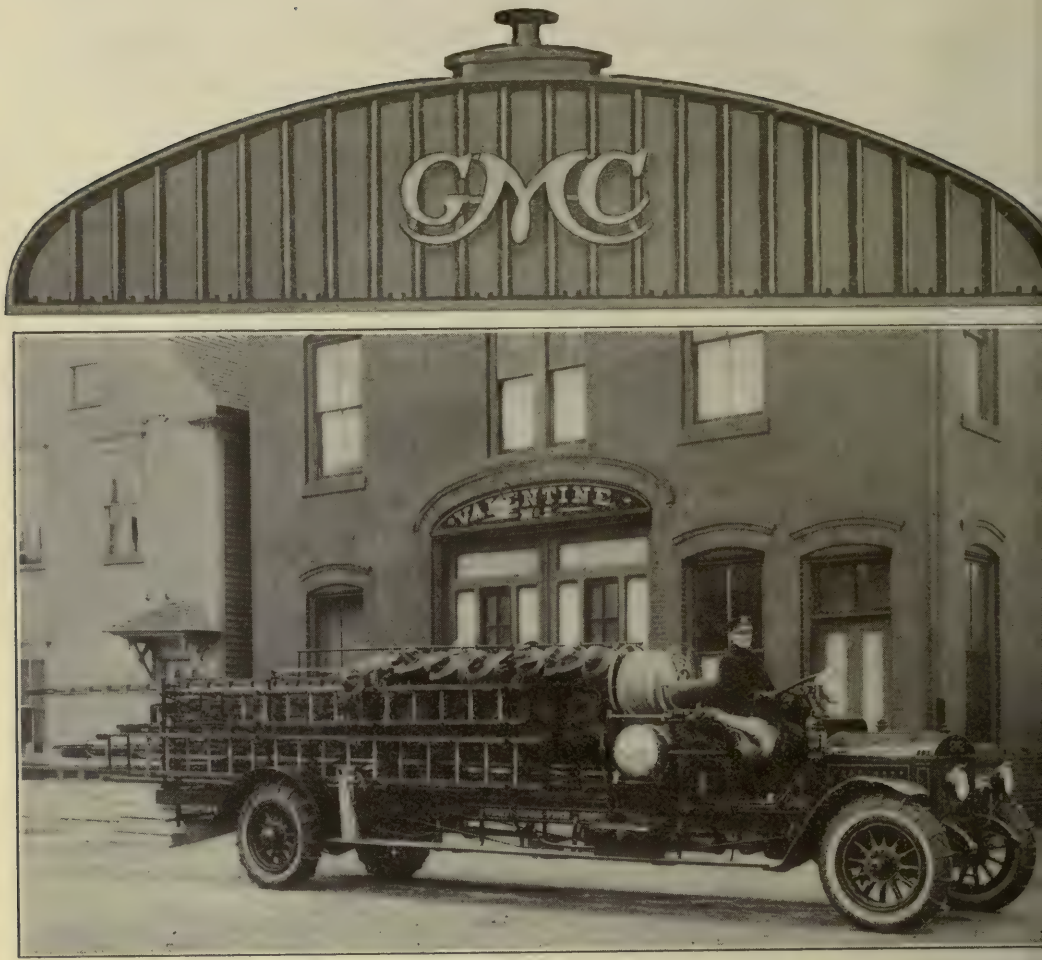
LAPEER, MICH.—Adopted a commission-manager charter under the home-rule plan at a general election held March 20. The new commission entered office April 15, and consists of the mayor and three other members, all elected at large. The new charter was carried by a vote of 3 to 1.

MCALESTER, OKLA.—At a recent election, a large majority of the voters declared in favor of city manager government. The new plan goes into effect this summer.

ELECTRA, TEX.—This city is pledged to the city manager plan and is now seeking a manager. The population is about 6,700, and a man with municipal engineering experience is desired.

BRISTOL, VA.—A commission-manager charter has been adopted here by a vote of 107 to 278. The Court has upheld the election as establishing the new plan.

SUFFOLK, VA.—A commission-manager charter, as provided by the laws of Virginia, was adopted at a special election held April 8. The vote was practically four to one in favor of the new form. The first commission under the new charter will take office September, 1920.



For Speed and Faithfulness—GMC Trucks

The faithful—ready-for-instant-action qualities of GMC trucks have won a distinct place for them in jobs where instant service is a requisite.

For fire department, police and ambulance work, GMC trucks are particularly well fitted by the fact that they can be relied upon to perform perfectly day after day.

Moreover GMC trucks do their work at a moderate cost for maintenance and operation.

Municipalities also find it a distinct advantage to standardize their truck equipment and the six models of GMC make it possible to find a GMC for every kind of city work.

Heavy-duty trucks are now in use in many public works departments as the lighter models find themselves in the fire, police and other branches of city work.

Write to Truck Headquarters for further information.

And Let Your Next Truck be a GMC.

GENERAL MOTORS TRUCK CO.

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School Commencements of 1919—A Unique Opportunity for Program-Makers

By William H. Allen
Director, Institute for Public Service, New York City

OUR American public school Commencement Day is a beautiful epitome of Democracy's achievement and promise. Children of rich and poor sit, indistinguishable, side by side. Parents and grandparents of all countries and all incomes, younger and older children, and not infrequently infants in arms, make up the responsive audience. The Stars and Stripes are draped over the stage and about figures of speech; national anthems are sung by young and old; graduates sing, speak, dance, and beam with appreciation, ambition and confidence. After eight or twelve years of undramatic tiring routine, and of home sacrifices that are no less taxing because hidden from the world, this dramatic climax in tears and smiles of joy and gratitude is called Commencement Day.

Most leveling processes level down; not so our public school Commencement Day, which always levels up. Brokers and bankers applaud the barber's boy who leads his class. The Yiddish grandfather of the class president sees the same vista ahead as the New England grandmother of the graceful girl who leads the folk dances, and both look with the idealistic vision of the graduates themselves.

The May and June commencements of 1919 offer unusual opportunities for program-makers. The world peace will have been concluded. The world, excepting possibly poor Russia, will have gone back to work. Patriotism, ambition, and personal consecration will be in the atmosphere as never before in the lifetime of this year's commencement audiences. For using this opportunity, three suggestions are made:

1. That examination and review questions call for proof that the meaning of the world struggle just finished and the world peace just allowed is understood by all graduates and all other older pupils.

2. That between now and commencement all other subjects give way if need be in order that schools be drilled and redrilled in the minimum essential facts of war, after-war and peace problems.

3. That the exercises be informatively and definitely patriotic and of such a nature that the community can participate in them.

It is hoped that readers of THE AMERICAN CITY will pass these suggestions on to school officers and editors who agree with the *Oakland Tribune* that "there is no necessity this year to dilate upon the literary vagaries of the Greek poets, or the value of the color scheme of butterflies, or how the poppy got its yellow complexion. War subjects, peace aspirations of the various belligerents, after-war problems, the prospective influence of the peace adjustment upon the economic and political affairs of nations, with special emphasis on the United States, ought to provide material for many interesting and original themes."

For commencement programs the Institute for Public Service suggests this list:

1. Peace conference playlet; suggestive outline by Rebecca Salsbury, price 10 cents.
2. Pupil-made plays descriptive of school or town participation in war work—recruiting, knitting, saving food, raising food, etc.
3. "Hostess House" or real canteen, acted by pupils.
4. Patriotic songs by audience.
5. Hero tales and camp life by returned soldier.
6. Hero tales and national dances by pupils.
7. War poetry recitations.
8. Peace lessons from war—"Four Minute" orations.
9. "Victory quizzes," or war-and-peace fact matches, on war initials, abbreviations, insignia, flags, uniforms, nicknames, etc., within graduating class, between graduating class and seventh grade or adults. P. S. 61, Manhattan, has a large map on the back of the movie screen, on which all places mentioned are pointed out.
10. Exhibit of war-time class work, posters, cartoons, etc.
11. Plea for school and town "war cabinet" and town halls as soldiers' memorials.
12. Three most interesting war books—describe.
13. Three successful war plays—describe.
14. War speed or war wonder illustrations.
15. How victory facts were used in our classes and assemblies.



HOW are you cleaning your catch basins and sewers? In the old slow, expensive and disease-breeding way, with piles of filth on your streets? Or the "SECO" way?

The "SECO" Portable Pumping Apparatus cleans sewers and catch basins at a saving of 50 to 90% over the old way.

This apparatus is mounted on a special

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The City's Legal Responsibilities and Powers

A Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

For special assistance in ascertaining the law, statutory or judicial, on any legal question relating to municipalities, address Legal Department, THE AMERICAN CITY, *Tribune Building, New York City.*

Unreasonable License Tax Ordinances

The rule of law that an ordinance which imposes a license tax greatly in excess of the probable cost of issuing a license and of inspecting and regulating the business must be deemed to be a revenue measure, and therefore violative of a municipal charter provision against levying occupation taxes for general revenue purposes, applies to an ordinance imposing a license tax of $25 a day, or $7,825 per annum, upon merchants selling their goods at auction. (Oklahoma Supreme Court, City of Tulsa vs. Metropolitan Jewelry Co., 176 Pacific Reporter, 956.)

✣ ✣

Local Assessments Against Cemetery Property

Under the laws of Missouri, the city of Kansas City was empowered to issue tax bills against lands of a cemetery operated by a Catholic corporation on account of the construction of a sewer, altho the net proceeds of lot sales are applied to the charitable object of assisting in maintaining orphan asylums. Unless an assessment against cemetery property for such an improvement is arbitrary and unreasonable, the extent of the benefit, essential to justify the levy, is a matter within the control of the municipal authorities. It is for such authorities to determine whether a cemetery should be made a sewer district by itself, rather than be included in a larger district. That a city may have adopted the former plan as to some cemeteries shows no discrimination in an assessment under the later plan as against another cemetery, in the absence of a showing of similar circumstances. (United States Supreme Court, Cemetery Association vs. Mullins, 39 Supreme Court Reporter, 173.)

Ratifying Unauthorized Contracts

The council of a city will be deemed to have ratified the unauthorized act of the board of public works in employing an engineer to prepare plans, etc., for the construction of a proposed sewage disposal plant where the council audited three bills of the engineer and ordered payments thereon. (New York Supreme Court, Appellate Division, Vermeule vs. City of Corning, 174 New York Supplement, 220.)

✣ ✣

Oil Storage Regulations

An ordinance of the city of Hope, Ark., forbidding the storing of petroleum, gasoline, etc., within three hundred feet of any dwelling, beyond certain small quantities excepted, is valid. That an oil company previously removed its tanks to a certain location at request does not prevent enforcement of the ordinance against the new location. (United States Supreme Court, Pierce Oil Corporation vs. City of Hope, 39 Supreme Court Reporter, 172.)

✣ ✣

Street Railway Control

A street railway company operating without a franchise may be required by the city to remove its tracks, or may do so voluntarily. But conditions as to fares, etc., in consideration for withholding exercise of the right of ejection by the city must be reasonable. As long as the company is permitted to serve the public it is entitled to compensation which will secure to it a fair return on the property employed in rendering the service, above cost of operation. (United States District Court, Northern District of Ohio, Henry L. Doherty & Co. vs. Toledo Railways & Light Co., 254 Federal Reporter, 597.)



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Pioneers of the Internal Gear Drive

THE unusually high percentage of power actually delivered at the rear wheels under even the most unfavorable conditions makes the Denby best for road building, paving and similar branches of municipal work.

Perfect enclosure of all working parts, and the high quality of the materials used in their construction enable them to withstand this hard service.

Capacities from 1 to 6 tons.

DENBY MOTOR TRUCK COMPANY, DETROI

's Liability for Services

lere rendition of services to a city with- proper authority (for example, a volun- filling of holes in a street) creates no ility against the municipality to pay efor. And, even where a city council ports to award a contract for an im- vement without observing a statutory uirement for letting the work on com- tive bidding, the contractor is not en- d to recover the agreed compensation. , altho the contract may be void, the city iable for the reasonable value of work beneficial character performed on the h of the agreement, and accepted by the nicipality. A claim against the defen- t, however, for the reasonable value of ding its streets became enforceable ere suit on it was not brought within r years after the right of action arose. ebraska Supreme Court, O'Neill vs. City South Omaha, 170 Northwestern Re- ter, 174.)

✣ ✣

acking Local Improvement Assess- nts

Where property owners have been af- ded opportunity to appear and object to essment proceedings, one who has failed avail himself of such opportunity will inarily be held to have waived any right bject to an assessment not shown to be pably erroneous or excessive. (North rolina Supreme Court, Felmet vs. Town Canton, 97 Southeastern Reporter, 728.)

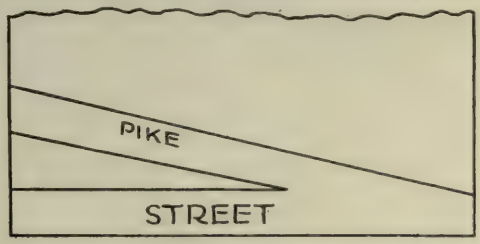
✣ ✣

ving-Picture Theater Regulations

An ordinance having a legitimate ten- cy to promote the public safety by regu- ng the manner in which moving-picture ater buildings shall be constructed will be held by the courts to be void because fined to such places and not including er theaters or places of amusement. Nor s the fact that such an ordinance may trict competition in the moving-picture siness render it objectionable. But an linance of the city of North Little Rock, ensibly designed to afford protection inst fire, is void where it was so worded t a building could comply with it with- being fire-proof while other buildings ually fire-proof would violate the ordi- nce. (Arkansas Supreme Court, Rose vs. y of North Little Rock, 206 Southwest- n Reporter, 449.)

Property Subject to Street Assessment

What would otherwise be a rectangular tract of land, bounded on the south side by a street, is cut into two tracts by a pike crossing the south part in a southeasterly direction in such a manner as to leave a small triangular tract abutting upon the street in the southwest corner. The pike's outlet into the street at the southeast corner of the original tract forms an intersection which abuts upon the north tract, as formed



by the pike. The street line does not touch the north tract excepting at the very point constituting the southeast corner of the original and north tract. Held, that as the north tract does not abut upon the street, being separated therefrom by the obliquely extending pike, that tract is not assessable under the Indiana statutes, altho lying within 150 feet of the street. (Indiana Appellate Court, Buckingham vs. Kerr, 120 Northeastern Reporter, 422.)

✣ ✣

Workman's Compensation Act Applied

A street sweeper accidentally run down by an automobile while at work is entitled to compensation under the Illinois Work- men's Compensation. (Illinois Supreme Court, City of Rock Island vs. Industrial Commission of Illinois, 122 Northeastern Reporter, 82.)

✣ ✣

Municipal Lien Claims

Under statutes giving a lien against mu- nicipal improvements to secure payment of material men, a separate lien claim should be filed for each distinct improvement, and a claim of lien embracing both a municipal water system and a sewage disposal system for materials furnished for both improve- ments is invalid unless it distinguishes the materials furnished to each. (New York Supreme Court, Niagara County; Ludlow Valve Manufacturing Co. vs. Village of Middleport; 173 New York Supplement, 209.)



Flusher mounted on an Indiana chassis; used by the City of Dallas, Texas.

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The Indiana Truck's heavy duty motor, over-sized bearings, one-hundred thousand mi rear axle, gasoline saving carburetor, and its dependable magneto will give you lowest co operating service in street flushing that you can buy.

Add to that the fact that the Indiana Truck is America's Greatest Truck Value and th it offers $150 to $850 more in value than do other trucks of equal capacity.

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have earned the reputation of ***"America's Greatest Truck Value"*** by sheer merit.

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MARION, INDIAN

gulating Garage Locations

n ordinance of the city of Chicago inst the location of garages within 200 of hospital or public school buildings rounds was not subject to suspension in articular case thru the issuance of a nit on authority of the City Council. where, in reliance upon such permit with the consent of all parties inter- d, the holder of a permit constructed a ge at great expense, the city was bound ssue a license permitting use of the ding for garage purposes. (People vs. mpson, 209 Illinois Appellate Court Re- s, 570.)

✣ ✣

bility for Defective Sidewalks

ltho dangerous accumulations of ice, must be removed from public sidewalks cities within a reasonable time, and e is liability for injuries resulting to estrians in consequence of a breach of duty, the number of miles of sidewalk ie city may be taken into consideration letermining whether after a particular vstorm the municipality has neglected ffect removal within a reasonable time. nnesota Supreme Court, Olson vs. City St. Paul, 170 Northwestern Reporter,)

Injuries Thru Storm Sewers

Altho a city may have been guilty of negligence in failing to provide adequate storm sewers, negligence of a merchant in permitting a backwater trap to become clogged, whereby his stock of goods was injured, will preclude him from enforcing liability against the city. (Washington Supreme Court, F. W. Woolworth Co. vs. City of Seattle, 177 Pacific Reporter, 664.)

✣ ✣

Termination of Franchise Rights

Rights granted by a municipal corporation to a public service corporation to use streets for poles, etc., without duration being fixed, is terminated by dissolution of either corporation. (Illinois Supreme Court, City of Sullivan vs. Central Illinois Public Service Co., 122 Northeastern Reporter, 58.)

✣ ✣

Liability for Defective Bridge

A contractor who has constructed a bridge according to plans is not liable for an injury to a traveler caused by the structure's giving way five years after it had been accepted by the public authorities. (Indiana Supreme Court, Travis vs. Rochester Bridge Co., 122 Northeastern Reporter, 1.)

City Planning Conference This Month

THE Eleventh Annual Conference on City Planning will be held in the cities of Niagara Falls and Buffalo on 26-28, 1919. It will convene at Niagara s on Monday and Tuesday, the 26th 27th, by invitation of the Niagara Falls mber of Commerce, holding most of its ions at the Chamber of Commerce, and Wednesday, the 28th, it will meet at falo. The conference is being held un- the auspices of the American and Can- n cities and towns of the Niagara fron-

he first conference session at Niagara s will be addressed by Dr. John Nolen Warren H. Manning on the subject wn Planning Problems of Industrial vns." The subject at the next session be "Planning of Residential Subdivisions," and the principal speaker will be Frederic L. Olmsted. The third session will be in charge of Nelson P. Lewis, of New York City, and the subject "The Location of the Railroads on the City Plan" will be discussed. "A Regional Survey and Plan" will be discussed at the fourth and fifth sessions, the last one to be held at Niagara Falls.

The conference will reopen in Buffalo on Wednesday at a noon lunch meeting, at which Lawrence Veiller, of New York, is scheduled to give a twenty-minute address on "Residential Zoning." That will be the subject also at the afternoon session, at which Arthur C. Comey will be the principal speaker. "Civic Centers" will be the subject at the evening and last session, with George C. Rice, of Buffalo, in charge.

THE BEST SPREADER MAD



THE GREAT NEED IN GOOD ROAD BUILDING

is the even spreading of stone along the road. The most economical method is to attach Burch Spreader to your motor truck and get a uniform layer of rock, as shown above. Th machine has proved itself a genuine money-saver in every case. You can spread a 6-inc layer as easily as a 2-inch layer by raising or lowering the regulating gate. Built for service sturdy and substantial.

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Tiffin Supremacy in the Street Flushing Field

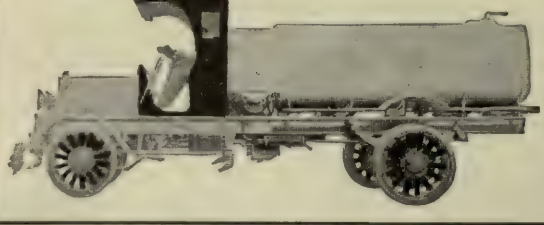
Three years ago a number of cities thought well of Tiffin 2-Motor-System Flushers.

Two years ago more cities had discovered their worth.

A year ago still more were saying that the Tiffin could be relied upon absolutely.

Today, the approval of American and Canadian cities has increased many, many fold.

BECAUSE,—the Tiffin principle—is right, and because Tiffin machines, that have been sold, are ALL standing up.



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TIFFIN OHIO

Municipal and Civic Publications

t of the City?

Walter D. Moody, Managing Director, Chi-ago Plan Commission. A. C. McClurg & Co., Chicago. 1919. xvi + 441 pp. 74 illus-rations. $2.00

ght years of successful negotiation of the plan of go by the Chicago Plan Commission is the reason for r to city planning this new definition or interpreta- states Mr. Moody in an early chapter of this e. His sub-title, "America's Greatest Issue—City ing: What It Is and How to Go About It to Achieve ss," leads the reader to anticipate a businesslike ent of the subject, and in this expectation he disappointed. Mr. Moody differs from his predeces- n this field in his emphasis upon the primary im-ce of promotional work. Perhaps the most valuable r in the book is the chapter on "Publicity," in which ows how to inspire the people and move them to . He does not, however, neglect the other important s of the problem of city planning, but explains care-each step of the work, making constant reference to periences in Chicago. Thruout the book he has em- an easy conversational style which makes the vol-extremely readable and entertaining, as well as nating.

alts and Allied Substances.

Herbert Abraham. D. Van Nostrand Co., New York. 1918. 208 illustrations. xxv + 06 pp. $5.00 net

reatise on the fabrication, merchandising and applica-f bituminous products. It contains chapters on the and chemistry of bituminous substances for the cian, a most complete discussion of the kinds, geo- and geographical distribution of all types, as well production of tars and pitches. Under the heading anufactured Products and Their Uses," are given thods of blending bituminous substances, a discus-f bituminous paving materials, roofings, paints, etc. ds of testing are very thoroly discussed.

Engineer's Pocket-Book.

ohn C. Trautwine. Trautwine Co., Phila-elphia, Pa. 1919. 20th Edition, revised, re-ritten and enlarged. $6.00

edition of Trautwine makes the fourth extensive n this standard publication has undergone since its ppearance in 1871. In the present edition about 400 have been set, chiefly dealing with railroads. All typographical errors in earlier editions have been ed. A reliable standard publication for reference, tten as to be understood readily by engineer or

Life.

harles Josiah Galpin. The Century Co., ew York. 1918. xvii + 386 pp. Illus-ated. $2.50

essor Galpin believes that the solution of the rural problem devolves upon each individual community to be found in human contacts—varied and nu-. "But how," he asks, "shall the rural population itself from the restrictions and repressions upon nner of life and labor . . . . so as greatly to its acquaintance with persons and increase its con-vith the human mind?" The author traces the l process of evolution of the "hoe-farmer" type into arm. engineer" and of the tired, lonely, isolated old drudge, thru the installation and use of im- household appliances, into a happy, normal, social et. The boro, he urges, is the natural and logical or social organization; and villager and farmer come together in clubs of various kinds—social, s, political: men's clubs, women's clubs, boys' and clubs. Many existing examples of such organiza-re described in detail by the author, who has used number of photographs to illustrate his text.

Housing Problems in America.

National Housing Conference. The National Housing Association, New York, 1918. ix + 469 pp.

This volume covers the proceedings of the Seventh National Conference on Housing, held at Boston, November 25, 26 and 27, 1918. It contains a score of authoritative papers on housing and reconstruction; on government housing, with particular reference to recent developments in Camden, N. J., Portsmouth, N. H., and Wilmington, Del.; on housing standards of the federal government; rent profiteering; the value of good housing as a factor in industrial life, developing merits of detached and group housing problems of housing management; the elimination of the slum; the relation of the health department to housing problems; and the new idea of the self-owning town. Each of these excellent papers is discussed by competent speakers. The papers and discussions are followed by an interesting section on Boston's housing problem and by short reports on housing problems all over the country from the delegates who attended the conference. Altogether it is an exceedingly valuable book for reference. The report of the Secretary and the index, thru which the "Housing Progress of the Year" is made quickly available, add greatly to its value.

Fighting the Spoilsmen.

William Dudley Foulke, LL. D. G. P. Putnam's Sons, New York, 1919. vi + 348 pp.

In a most interesting way, Mr. Foulke tells the story of the long fight for civil service reform. Beginning with a bill introduced in the Senate by Charles Sumner in 1864, the movement in favor of appointment on the basis of competitive examination, rather than as a result of partisan activity, gathered strength under the guidance of such men as George William Curtis, Carl Schurz, Dorman B. Eaton, and Theodore Roosevelt. The story which Mr. Foulke tells reveals the growth of a great idea, in the development of which he had a major part as State Senator in Indiana, as Chairman of the Civil Service Investigating Committee under President Harrison, as Civil Service Commissioner under President Roosevelt, and as President of the National Municipal League. The city official and the student of government who must face civil service problems will find in this fascinating narrative the reason for the vital force and growth of the merit system.

114 Proved Plans to Save a Busy Man Time.

A. W. Shaw Co., Chicago. 1918. 160 pp., diagrams, illustrations and charts. Not purchasable.

Schemes used by many executives are described in this handy volume. The plans are given as actually used in different lines, but are readily adaptable by any competent executive. A valuable treatise for overburdened municipal officials and chamber of commerce secretaries.

A System of Parks for Aurora, Ill.

This is the title of a large and attractive booklet containing a report by Myron Howard West, in which he discusses Aurora's present needs and opportunities in regard to parks and presents a program for a thirty-years' development. The booklet is profusely illustrated by photographs and by large attached maps reproduced in color. 1918. 46 pp. (Requests for copies of this report should be addressed to Myron Howard West, President of American Park Builders, Chicago, Ill.)

The Community Market.

Community markets eliminate the profits of the middleman by bringing the producer and the consumer together directly. Interest in these markets is becoming widespread. The Massachusetts Agricultural College, thru its Extension Service, has made a thoro study of the community markets of Massachusetts, and has issued a bulletin describing their organization and equipment, quoting state legislation on the subject and listing the cities in Massachusetts that have these markets. 22 pp. (Write for Extension Bulletin No. 21.)

—wrote the Sales Manager to the Road Commission

LETTER No. 5



"Keep in mind," he says, "that all-important element—the company behind the product."

IN addition to DEPENDABILITY, ECONOMY and SERVICE, the main factors that constitute successful tractor performance in the hands of the owner, keep in mind that all-important element in a satisfactory tractor purchase—the company behind the product.

"Naturally all else is of small consequence if the manufacturer's integrity and business policies are not of the highest.

"Eighty years of continuous manufacturing of power farming machinery is our record. Starting with only a blacksmith shop for a factory and two hands for capital, the factory buildings of the Advance-Rumely Thresher Company today cover 197 acres and its capital assets are $26,250,000.

"It is very manifest that no company could show such a record of progress and growth unless it was built upon the solid foundation of excellence of product and sound business methods.

"A business is only as permanent as the satisfaction and loyalty of its customers. We number them by the thousands. We believe that experimentation should be done at our expense and not the public's.

"We do not believe in, nor do we build upon extravagant claims. Our arguments for the worth of our product are not mere claims to go the other fellow one better. We claim only what our tractors deliver to the owner in every day performance—and we specifically warrant our product to live up to those claims.

"—that's not righteousness—it's just plain square dealing."

Advance-Rumely Thresher Company, Inc.
La Porte, Indiana



A size for every road job

ADVANCE-RUMELY

ebate on the City Manager Plan.

olved:—That the city manager plan of municipal gov-ent should be adopted in all cities of the United with over 5,000 inhabitants." This question is the ct of a debate bulletin, published October 15, 1918, e Department of Public Discussion and Debate of niversity of Oklahoma. Much difficulty appears to attended the preparation of this bulletin, owing to ict that the city manager plan is of such recent date hus far little opposition has developed, and therefore ients for the negative were not easily procured. The in succeeds in presenting both sides of the case, ver, and is, on the whole, thought-provoking and y of careful perusal. 77 pp. (Apply to J. W. gs, Editor, University Extension, University of oma, Norman, Okla.)

ig Chance for the Disabled Soldier.

u are interested in what Uncle Sam has planned to r the disabled soldier in training and placing him in n employment, you can obtain information concern-nany varied types of occupations which are open to y reading the "Opportunity Monographs" issued by ederal Board for Vocational Education, Washington, . One of this series, a 10-page pamphlet entitled ty and Fire Protection Engineering," should make pecially strong appeal to the disabled man, as this f work gives him a big chance to make a good living t the same time render a service to his fellow men.

Americanization Handbook for Teachers

ed "Heroes of Freedom" is also published by the rnia Commission of Immigration and Housing. It les: (1) a suggested program for the promotion of icanization among school children thru the study of s of the past of all nations that have been working ds the American ideal of freedom; (2) a bibliography sist in this study; and (3) "The Family Tree of ica," showing America as a fusion of many nation-into one—a new and great composite democracy de-to the highest composite ideals of all nations. 48 pp. address of the Secretary of the Commission, given .)

vards a New Industrial Era"

forward-looking title of the latest report of the Con-s' League of New York City. The report presents islative program for this year consisting of six bills, ng to the eight-hour day, minimum wage, health in-ce, and protection of office workers, transportation ers and elevator operators, and shows by the results tual investigations how vitally essential these laws 24 pp. (Published February, 1919, by the Con-s' League, 105 East 22d Street, New York.)

arden Village in Miniature.

average architect, lamenting the straight-jacket of ridiron street plan, sighs for large acreage tracts to op," says Lawrence Veiller in a 12-page pamphlet ed "Triumphing Over the Gridiron Plan," reprinted *The Architectural Record*. This booklet demon-s the fact that even a city block as small as 200 by feet can be transformed into a miniature garden e. Numerous attractive drawings and diagrams help ake clear to the reader just how this can be done. lished December, 1918, by the National Housing Asso-n, 105 East 22d Street, New York. Price 10 cents.)

er Housing in Iowa.

bulletin, issued by the Iowa State Board of Health, ins brief articles on the following topics: the scope state housing law, the need of such a law, relation of ng to health, woman's interest in a state law regu-housing, and the importance of better housing from andpoint of the employe. The proposed state housing for Iowa is given in full. 48 pp. (Write the Iowa Board of Health, Des Moines, Iowa, for Bulletin .)

erculosis Findings.

report of the Framingham Community Health and rculosis Demonstration of the National Tuberculosis ciation considers all of the cases of tuberculosis that come to the attention of the Health Demonstration the beginning of the work on January 1, 1917, up to mber 15, 1918. A detailed analysis is given, and an is made to show the bearing of the Framingham veries as regards tuberculosis upon statistical and al tuberculosis problems at large. 85 pp. 1919. mingham Monograph No. 5, procurable from Donald Armstrong, M. D., Community Health Station, ingham, Mass.)

Housing in Canada.

A 16-page pamphlet of this title, issued in March, 1919, presents a detailed description of the housing project of the Federal Government of Canada. The following topics are discussed: I., Granting of Loan of $25,000,000; II., Constitution of Cabinet Committee of Housing; III.,General Principles to be Followed in Housing Schemes; and IV., Form of Approval of Scheme. (Write to Thomas Adams, Housing and Town Planning Adviser, Ottawa, Canada.)

Municipal Statistics of the Province of Quebec.

Statistical tables for the year 1917, printed in October, 1918, in both French and English. The subdivisions of the report are: population, roads, new buildings, basis for imposition of municipal taxation, cash book (receipts and liabilities), balance sheet of liabilities and assets, and value of public utility services owned by municipalities. 221 pp. (Write to Jeremie-L. Decarie, Provincial Secretary, Quebec, Canada.)

Parks and Recreation in St. Louis.

For year ending April, 1918. A noteworthy characteristic of this report is the devotion of nearly all the pages of the book to photographs, which tell the story of accomplishment in a most admirable fashion, and the entire absence of the dull and dead discourse which usuallly pads such reports and which no one ever reads thru from beginning to end. A brief introductory statement gives a summary of the year's achievements, and statistical tables supply any further necessary information. 78 pages and two large appended tables. (Apply to Nelson Cunliff, Commissioner of Parks and Recreation, St. Louis, Mo., for copy of this report.)

A Key to the Library.

Comparatively few people realize the treasures which are stored in a great public library. They need a key with which to unlock this storehouse and discover and explore its contents. A few high schools are now beginning to supply their pupils with such a key, so that after these boys and girls leave school they will still possess the "Open Sesame" to knowledge, power, and mental and spiritual refreshment, which the library offers to all who are prepared to accept these great gifts. A pamphlet entitled "Library Lessons for High Schools" has recently been prepared to give practical assistance to high schools in this most valuable work. 1918. 26 pp. (Write to C. P. Cary, State Superintendent, Madison, Wis.)

A Civics Textbook for Wisconsin.

"The Local Governments of Wisconsin" is the title of a publication of The College Press, Appleton, Wis., designed especially for the use of the public school teachers of the state. It devotes a chapter each to government of the family, the school, the school district, the town, the village, the city and the county. 71 pp. 35 cents.

Nova Scotia Municipalities Hold Annual Convention.

The proceedings of the thirteenth annual convention of the Union of Nova Scotia Municipalities, held in August, 1918, are now available in book form. The volume includes the following reports in full: Report of the Executive, Good Roads, The Provincial Highway Board, Some Phases of the Good Roads Problem, The City Manager System of City Government, Community Development and Reconstruction in Nova Scotia, The Returned Soldier, The Farmer and the War, and The Fishermen and the War. 128 pp. (Published by Weeks Printing Company, Ltd., 54 Argyle Street, Halifax, Nova Scotia.)

Collection and Disposal of Municipal Waste in New York City.

The April, 1919, report of the Health and Sanitation Committee of the Brooklyn Chamber of Commerce includes not only a careful analysis of the city reports, but also a brief summary of recent activities of garbage disposal plants in a number of the largest cities in the United States and an expert examination of the Staten Island plant. 26 pp. (Apply to Wm. S. Hubbard, Chairman of the Committee.)

The Fate of the Five Cent Fare.

An article by Dorsey Wm. Hyde, Jr., reprinted from the *National Municipal Review*. A list of "Miscellaneous Sources of Information" is appended. 8 pp. (Procurable from Dorsey Wm. Hyde, Librarian, Municipal Reference Library, 512 Municipal Building, New York City.)

"High Points" in Work of New York City High Schools.

A monthly publication issued by the Board of Education of New York City. 32 pp. (Apply to the Board of Education, 500 Park Avenue, New York.)



UP GRADE SAFETY

The clean cut edges of Metropolitan and Bessemer Paving Blocks insure a safe foothold for horses and make it the ideal pavement for hill-side streets.

Metropolitan and Bessemer Block furnish the solution for every paving problem. If you want to avoid the expense of street repairs and paving replacements you will do well to bear in mind the fact that our paving blocks will provide you pavements that in most cases call for no repairs whatever.

During the cessation of road-building activity on account of the Great War, we continued our plants in operation, thereby accumulating a reserve of METROPOLITAN and BESSEMER BLOCK against the road building revival which is now upon us. We are prepared to make immediate shipments to all parts of the United States.

METROPOLITAN and BESSEMER Plants located as strategic points and with a daily capacity of 500,000 blocks render eloquent testimony as to our ability to serve satisfactorily all demands for "The Best Paving Block Made."

Literature on METROPOLITAN and BESSEMER BLOCK will be sent on receipt of your address.

THE METROPOLITAN PAVING BRICK COMPANY

CANTON, *The World's Largest Manufacturers of Paving Brick* OHIO

ppropriations for City Health Departments.

summary of the expenditures of 330 cities in the cen-al and eastern United States for public health work, ith comparisons and tabulations. 1918. 8 pp. Reprint o. 439 from the Public Health Reports, issued by the . S. Public Health Service, Rupert Blue, Surgeon-Gen-al, Washington, D. C.

lay and Athletics.

his bulletin, issued by the Division of School Interests the University of Texas, is devoted to the subject of ysical education in its various phases: care of the body, ayground games and equipment, athletic contests, or-nization of meets, leagues, etc. Many games and track d field events are described in detail, and a helpful bliography is appended. Athletics for all is the key-note the volume. 114 pp. (Apply to the Chairman of the ublications Committee, University of Texas, Austin, exas.)

ublic Water Supplies and Sewer Systems of Michigan.

he Public Water Supplies and Sewer Systems of Michi-n. Engineering Bulletin No. 12 of the Michigan State oard of Health. By Edward D. Rich, C. E., State Sani-ry Engineer of Michigan. 1918. 40 pp. (Apply to thor as above, Lansing, Mich.)

lan of Stillwater.

repared under the direction of the Park Board. This ooklet presents in interesting and appealing form a plan civic development which it would be worth the while city officials and city planners in other cities to study. hotographs, maps, plans. 1918. 43 pp. (Apply to T. Wilson, Chairman, Park Board, Stillwater, Minn.)

lousing—Its Relation to Social Work.

y Albion Fellows Bacon, June, 1918. 9 pp. A brief atement of the interrelation of disease, vice, and the con-stion of the slums, and the progress that follows the mination of bad housing. No. 48 of the National Housing ssociation Publications, 105 East 22d Street, New York ity. Price 10 cents.

uilding, a Municipal Problem.

his 8-page pamphlet discusses building as a prime factor the progress of a city; considers the problem of the resent high cost of living, labor and material in its ampering effect upon the building industries; and makes strong plea to individuals for encouragement of building onstruction and the study of the problem of stabilizing the ost of labor and material as the most important step in is direction. (Write to Municipal Problems Publishing o., Champaign, Ill., for "Municipal Problems—Building, olume I.")

roportional Representation for Private Elections.

hambers of commerce and other organizations which are onsidering the adoption of proportional representation or any purpose will be interested in the Hare system, de-cribed in an 8-page pamphlet published by the American roportional Representation League at the Franklin Bank uilding, Philadelphia, Pa. Explicit directions are given egarding nominations, the count, election provisions and acancy provisions. The League is prepared also to give dvice to any organization desiring to adapt proportional epresentation to its own particular uses.

eport of Missouri State Highway Board.

or the period beginning March 13, 1917, and ending ecember 31, 1918. A record of accomplishment under ie most adverse conditions, copiously illustrated by pho-graphs and diagrams, showing "before and after" road onditions and the various processes of road-building. ables and large maps, contained in a pocket in the cover the book, mark every phase of the road-building rogress in the state. 141 pp. (Send request for this eport to E. L. Sanford, Chairman, State Highway Board, efferson City, Mo.)

Var Gardening and Home Storage of Vegetables.

art I of this pamphlet, entitled "War Gardening Man-al," includes general instructions for planting, fertilizing, praying, etc., with specific directions for growing the arious kinds of vegetables; Part II, "The Home Storage lanual for Vegetables and Apples," tells what and how to ore. 32 pp., illustrated.

eport of U. S. Housing Corporation.

ssued December, 1918, by the Bureau of Industrial lousing and Transportation, U. S. Department of Labor, Vashington, D. C. 126 pp. Organization chart attached.

Survey of Comfort Stations on Elevated Rail-Roads.

This study was undertaken under the auspices of the Juvenile Protective Association of Chicago, and has resulted in the immediate acceptance by the City Council of an amendment to the traction ordinance. 4 pp. (Apply to Benjamin Blinstrub, in care of the Association, Chicago, Ill.)

Manual for Weights and Measures Officials.

A book of 246 pages, discussing in a thoro manner the general powers and duties of weights and measures officials, specifications for apparatus, weights and measures standards and equipment, and a system of records for office and field use. Four appendices contain: the federal laws in relation to weights and measures, a model state law on this subject, the metric system and general tables of weights and measures and tables of equivalents. (Write to F. S. Holbrook, Inspector of Weights and Measures, Bureau of Standards, Department of Commerce, Washington, D. C.)

"Housing Betterment"

is the title of the quarterly publication of the National Housing Association, the February issue of which contains 55 brief articles reporting the housing progress of some of the cities of the United States and Canada and a few foreign cities. A few of the many unique and interesting features in the current issue are the report of the plans for an interallied competition for the rebuilding of the French city of Chauny, an educational program in housing and town planning for our soldiers overseas, a report of the protest of an undertaker against the deplorable insanitary housing conditions in his city, and a report of a comprehensive plan for government aid to housing in Canada. A bibliography of recent books on housing and town planning is appended. 101 pp. (Issued by the National Housing Association, 105 East 22d Street, New York.)

County Government in North Carolina.

County government, which has been called the "Dark Continent of American Politics," has been explored by the North Carolina Club at the University of North Carolina. The Club has been busy for a year in collecting data in North Carolina, assembling the facts about county affairs in other states and recommending ways and means of improvement and progress in county government in North Carolina. The Club's findings, published in Bulletin No. 159, by the University of North Carolina, Chapel Hill, N. C., should prove of considerable value to county officers of other states as well as North Carolina. 188 pp.

The Causes of Dependency.

Based on a survey of Oneida County, New York. As may be judged by the number of pages—105—the study of the causes of delinquency and dependency by the Bureau of Analysis and Investigation of the New York State Board of Charities has been undertaken in no light, casual manner. Oneida County was selected for intensive study simply as a typical New York State county. Besides a most thoro-going investigation into all types of causes of all types of dependency in the state institutions of the county, mental examinations of many school children were made and tabulated, as the experience of educators and officials of institutions has found that in the analysis of early deviations from the normal in children they are able to foresee and forestall many potential failures. (Write to New York State Board of Charities, The Capitol, Albany, N. Y., for "Eugenics and Social Welfare Bulletin No. XV.")

What to Do with the Non-Conforming Building in Zoning.

"Next to controlling the erection of new buildings, nothing is more important in zoning than to regulate the use of old ones," says Herbert S. Swan, Secretary of the Zoning Committee of New York City. In his four-page paper entitled "The Non-Conforming Building in Zoning," reprinted from *The American Architect*, he first classifies these buildings under three heads: first, nuisances, i. e., trades especially noxious or offensive by reason of the emission of odor, dust, smoke, gas or noise; second, manufacturing; and third, business, embracing all trades and industries other than those included within the first two classes. Then follows the discussion of each type of building, with practical suggestions of tactful methods of treatment which should make this paper of interest and value to city plan commissions in other cities besides New York.

SAGINAW CALCIUM CHLORIDE

Preserves Roads at least cost



Prevent dus an wea

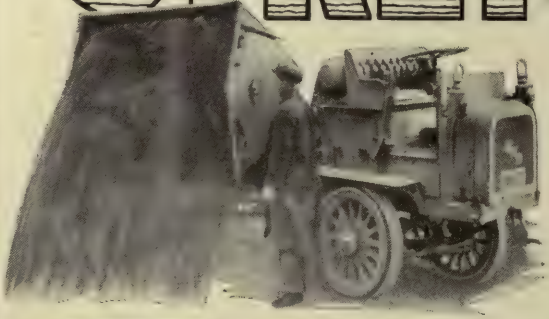
Road in front of our factory. Material: Bayport Stone. Dark portion in foreground, Saginaw Calcium treated and dustless; white portion, untreated.

SAGINAW CALCIUM costs less per square yard than any other road treatment including water sprinkling. It is colorless and odorless, non-corrosive and non-combustible, contains no oil or tar or sticky substance, is not poisonous and will not damage rubber, paint or horses' hoofs.

SAGINAW CALCIUM can be applied without any interruption of traffic and is a bactericide. The effect of calcium is culminative, less is required the second season than the first. It absolutely will not damage a roadway, it never produces a loose, flaky or mealy surface but incorporates itself into the surface of the road and binds it, thus preventing raveling.

SAGINAW CHEMICAL CO., South Michigan Avenue, Saginaw, Mich.

STRENGTH



THE F-W-D load is 45% on the front axle and 55% on the rear. Other trucks' load is 75 to 95% on the rear axle. Even distribution of power and load in the F-W-D is one reason for its great strength.

In road building and city hauling the F-W-D has many advantages—small turning radius, easy handling in traffic and narrow alleys, quick pick-up and four-wheel brake.

F-W-D has correct principle of power application, economy of upkeep, low fuel and tire costs. Constant service regardless of weather. Let us send you catalog and records.

The Four Wheel Drive Auto Company
Dept. 106 Clintonville, Wisconsin
Canadian Factory: Kitchener, Ontario

FWD

TRUCKS

The boys from the Front will tell you

Plan for the Development of the Village of Grand Canyon, Arizona.

little village of Grand Canyon has suffered the dicap of possessing a largely transient population, h has operated to discourage the customary organiza- of local self-government and local interest in public cs. A pamphlet of the above title deals with an npt to develop a working plan for the physical im- ement of the village and to facilitate the early olishment of some form of self-government for the 's permanent residents. 24 pp. (Write to U. S. artment of Agriculture, Forest Service, for free copy his report.)

nicipal Legislation During the 1919 Session of the New York State Legislature.

pecial typewritten report of the General Legislative mittee of the New York State Conference of Mayors Other City Officials. 4 pp. (Apply to William P. es, Secretary, 25 Washington Ave., Albany, N. Y.)

Guide Posts to Effective Social Service.

Pamphlet publications are available on more than two hundred important subjects, such as The War Chest and the Federation Movement, The Public Defender—an Aid to a Square Deal in the Courts, Rural Centers of Community Activity, Supervision of the Feebleminded in the Community, The Necessity for Changes in Americanization Methods, The County as a Unit in Social Work, The County as a Unit in Charity Administration, Actual Experience, The Negro's Part in Racial Coöperation in the Community, Conserving Development Increment for the Community, The Village as a Factor in Social Progress, The Tenant Farmer and Land Monopoly, and The Status of Social Work in Rural Communities, containing practical information for laymen, professionals and volunteers in social service. Any of these here listed may be obtained for 5 cents each from the National Conference of Social Work, 315 Plymouth Court, Chicago, Ill.

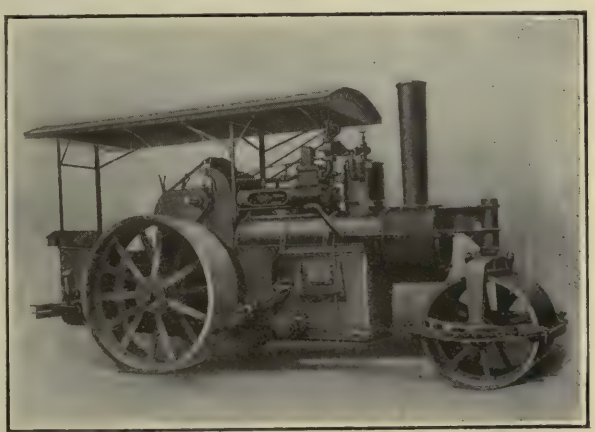
Methods · Materials · Appliances

News for Boards of Public Works, Engineers, Contractors, Purchasing Agents and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Modern Steam Road Roller

The Austin steam roller, as shown in the accompanying illustration, is specially designed for the making and maintenance of modern crushed stone and gravel roads. Three fundamental requirements in a first-class road roller are: proper width of tread, proper distribution of weight, and proper diameter and width of road wheels. Besides these primary qualities, The Austin Western Road Machinery Company of Chicago claims many other advantages for the Austin roller, including: a boiler with an exceptionally large heating surface, which means not only ability to raise steam quickly, but to keep up a high pressure under heavy working conditions; the transmission carried in a heavy cast steel case, which enables all the bearings and gears to be carefully aligned and assembled before the case is attached to the boiler, and hence insures careful manufacture; the cylinders cast together with the crosshead guides, thus insuring alignment; and gear faces and bearing surfaces larger than on other makes of road rollers, resulting in longer life to the bearings themselves, the maintenance of better alignment and ultimately a large saving in horse-power.

The Austin steam roller is not a cheap machine. The company's effort has been rather to furnish the best steam roller made and to enable purchasers to secure the full value of their investment in the form of real working advantage, greater durability and lower operating cost. General catalog No. 18 will be sent free upon request.



STEAM ROLLER FOR CRUSHED STONE AND GRAVEL ROAD CONSTRUCTION

Save Your City's Trees by Spraying

The accompanying photograph shows one of the power sprayers of The Deming Company, of Salem, Ohio, in use on the trees of a small park. The Deming spraying outfits are especially recommended by The Davey Tree Expert Company, tree surgeons, of Kent, Ohio. This company puts the matter to its clients in this way:

"The work of the surgeon is fruitless if the physician is negligent. It is impossible for the most expert tree surgeon to save a tree by the most scientific work if the insect pests and fungus diseases are permitted to work upon the trees and destroy them or prevent the foliage from manufacturing the food materials from



LIGHTING STANDARDS

The New Lighting Standards In Cincinnati

Interesting pictures of the new street lighting system of Cincinnati will appear in the June issue of THE AMERICAN CITY. Watch for it. The lighting standards used in this installation were furnished by the Electric Railway Equipment Company.

Send for our new catalog just off the press.

Electric Railway Equipment Company

CINCINNATI **OHIO**

New York Office, 30 Church Street

which the tree is built, and from which all wounds are healed. It is no longer a question of whether it is advisable to spray, because it has been demonstrated beyond a doubt that spraying is a necessity. It is now simply a question of how to do it most efficiently and what apparatus is necessary and most economical for the different kinds of work."

An illustrated catalog of the Deming power sprayer is sent free on request to city officials by The Deming Company.



DEMING POWER SPRAYERS ARE USED TO PRESERVE THE BEAUTY OF THE TREES IN THIS PARK

Municipal Electric Lighting for Allentown

The city of Allentown, Pa., contemplates installing a municipal lighting system, and Frank Koester, consulting engineer, 50 Church Street, New York City, has been retained by the city to prepare a report on this subject. The report shows that, while the city at present pays a local company $51,000 per year for street lighting and $2,000 for building lighting, if the city installs an electric generating plant in connection with the municipal water-works a yearly saving of $19,000 will be effected.

Mr. Koester recommends substituting the present arc light system with nitrogen-filled tungsten lamps, to secure not only greater illuminating effect but also smaller operating cost. The plant of 350-kilowatt capacity will also take care of future extensions to the present lighting system. The boulevard lighting on the main business thorofare, which is recognized as one of the most effective and economical lighting systems thruout the country, was installed in 1916 on the recommendation of Mr. Koester, who was then retained by the Allentown City Planning Commission in advisory capacity. Many of the recommendations made in his City Planning Report have since been adopted by Allentown.

Rumeley OilPull Successfully Goes Thru the Chateau-Thierry Drive

An interesting letter has just come into the possession of the Advance-Rumely Thresher Company, Inc., of La Porte, Ind., thru its Billings, Mont., branch. The letter is from Corporal Ray Yates, who before he enlisted for service was associated with an Advance-Rumely dealer at Denton, Mont., to whom the letter was written. To quote from the letter:

"I've been working on a 16-30 OilPull that had pulled supplies all thru the Chateau-Thierry drive. I suppose there were 300 bullet marks on it. One shell had gone thru the rim of the rear wheel, making a hole ot about 6 inches. The radiator was torn all to pieces and a barrel in its place, and the oil tank looked like a porcupine, it was so full of plugs. I stepped on it and it started the first turn."

Army Gas Masks Not Always Suitable for Firemen

Fears that many firemen and miners will be killed by attempting to protect themselves by



Illustration by courtesy of The Eagle Wagon Works, Auburn, N. Y.

A TRAIN OF "STAR" REVERSIBLE HAULING AND DUMPING WAGONS IN TEXAS, EACH LOADED WITH 4½ CUBIC YARDS OF GRAVEL



Union Metal White Way Lighting System in Allentown, Pa.
Allentown's Lighting System is guaranteed for 20 years by the use of Union Metal Lamp Standards.

Guaranteed for 20 Years

Union Metal Engineers do not rest on the simple statement that their Lamp Standards are superior in design and construction. They back this claim with a written guarantee to replace any standard which fails, from any cause whatever (except willful damage) within a period of 20 years.

No cast iron lamp post manufactured can offer such a guarantee. The pressed metal shaft of Union Metal Lamp Standards, together with the scientific sectional construction, protects the city against any possible cost of replacement and reduces to a minimum the possibility of a damage suit resulting from injury to the public.

This guarantee is made by a firm whose position in the industry has long been established and whose financial standing makes their guarantee binding.

Insist on a Guarantee with Your Lighting System

Central stations, engineers, contractors, civic bodies and others interested in improving their city should write for assistance in plan ning their campaign. We will cheerfully render this assistance and help you to obtain a lighting system, guaranteed against any replacement expense for a period of 20 years.

Write for our 80 page Catalog of Street Lighting Units.

The Union Metal Mfg. Co., Canton, Ohio

Largest and Oldest Manufacturers of Ornamental Lighting Standards

Design No. 807—Union Metal Lan
Standard with G.E. Form 9. Novalu
Lighting Unit. Standards Fitted wi
Union Metal Flower Bowls.

using army gas masks are being vigorously expressed by officials of the Bureau of Mines. Attention is called to the results to Fireman Clark and Lieut. Parker of the New York Fire Department. In Lieut. Parker's case, altho the effects were not immediately noticed, he has been in Bellevue Hospital for more than two weeks.

An official said: "In the thick fumes of a fire the mask is not able to protect its wearer. We fear that many firemen will be killed if the fire departments do not stop buying this store of masks which were thrown on the market with the signing of the armistice. The only sound protection for a fireman at present is the contrivance which provides oxygen from a tank carried on the man's back."

Director of Sales Promotion for General Motors Truck Company

W. L. Day, President of the General Motors Truck Company, of Pontiac, Mich. has announced the appointment of C. F. Rouze as director of sales promotion, with headquarters at Pontiac. Mr. Rouze comes to the GMC organization from the Knox Motor Company, where he was sales manager. Since the earliest days of the motor truck industry he has been closely identified with it, and before that had a wealth of experience in the farm implement field. He was one of the organizers of the Rapid Motor and Transportation Company of Kansas City in the days when motor trucks were few and far between. Subsequently he served as Western Supervisor for the United States Motor Company for sixteen states west of the Mississippi, and also as director of sales for the same territory for the American Locomotive Company, builders of the well-known Alco motor truck. When this truck was discontinued he joined the Knox Motor Company organization.

New Address of Hill & Ferguson, Consulting Engineers

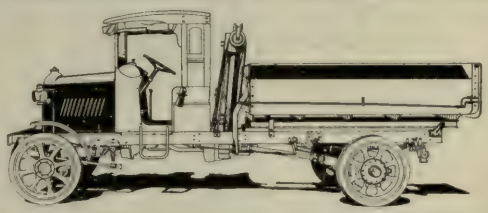
Nicholas S. Hill, Jr., and S. F. Ferguson, consulting engineers, announce the removal of their engineering offices and laboratory from 100 William Street to 112 East Nineteenth Street, New York City, on May 1.

Advertising Specialist Opens Office

S. Roland Hall, who has been associated with the Alpha Portland Cement Company, of Easton, Pa., as manager of publicity, has established an office of his own in that city, where he will specialize on advertising and agency service, writing, selling, and business aids. Mr. Hall is also a specialist in "better letters" and direct mail work, and will devote much of his time to that branch of advertising.

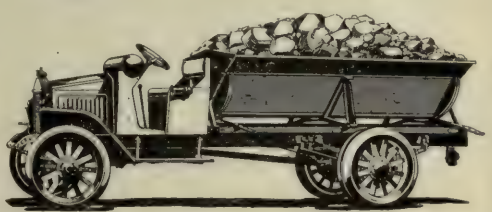
Dependable Trucks for Municipal Service

The use of motor trucks in highway work, in garbage, ash and refuse collection, in water department work and the many other phases of municipal activities is now almost taken for granted. The Denby Motor Truck Company, Detroit, Mich., maintains high standards in the construction of its trucks, believing that the ideals of the builder are inevitably reflected in his product. Each department in the Denby plant is separate, yet so located that the trucks progress rapidly with no wasted effort, from



3½-TON DENBY TRUCK WITH HYDRAULIC DUMPING BODY

the raw material thru all its various processes and tests until it reaches the shipping platform. Bodies of all prices are furnished for use in the Denby truck, but the same dependable chassis is always the foundation, no matter what the service or price of body. Denby trucks are made in 1-, 1½-, 2-, 2½- to 3-, 3½- to 4-, 5- to 6-ton sizes and can handle any type of municipal work. Since the body must fit the work, great care is exercised in the design and



2-TON DENBY TRUCK WITH GRAVITY SIDE-DUMPING BODY

construction of the body, for the benefit of the purchaser. The illustrations shown here indicate two particular types of bodies very useful in municipal work: one, the end-dump body, with hydraulic hoist; the other, a gravity side-dump body, for use where heavy material may be dumped more conveniently on the roadside than in the road.

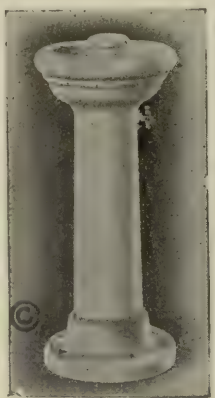
New Name for Pittsburgh Filter Manufacturing Company

The Pittsburgh Filter Manufacturing Company, in order to express more directly its extensive interests, has changed its name and will hereafter be known as the Pittsburgh Filter & Engineering Company. The headquarters of the company are at Oil City, Pa.

The company issues much printed matter relative to the value of installing modern filter equipment in municipal water departments, and will be pleased to send this literature to water department officials and others interested in the work of water purification.

CLOW
CHICAGO

The Most Sanitary Drinking Fountain Made



M4500 Bubbling Drinking Fountain

Because it is germ proof, no metal can touch the lips, no earthenware can be taken into the mouth—no sharp edges.

Over 500 of these fountains have been installed on the streets of Chicago. Used by many big concerns, among them—Armour & Co., General Vehicle, Sears Roebuck & Co., General Electric, Baker-Vawter and many others. Hundreds of letters attest their serviceability, durability and superiority.

Especially recommended wherever children are because there are no loose parts. It is the one safe sanitary fountain and like all

CLOW

appliances it represents the best that human skill and ingenuity has been able to devise.

Built to Do Away with Trouble

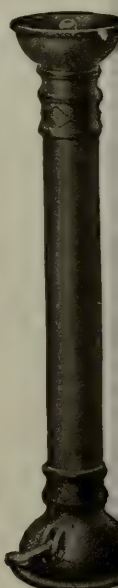
this fountain is giving complete satisfaction wherever it is in use. Orders are executed promptly—large stocks insure quick service. Write for catalog of Clow Drinking Fountains—address,

James B. Clow & Sons
534-546 So. Franklin St.
CHICAGO, ILL.
Sales Offices
New York Milwaukee St. Louis
Philadelphia Minneapolis
Detroit San Francisco

CLOW
CHICAGO

HAVE A DRINK
ON THE CITY

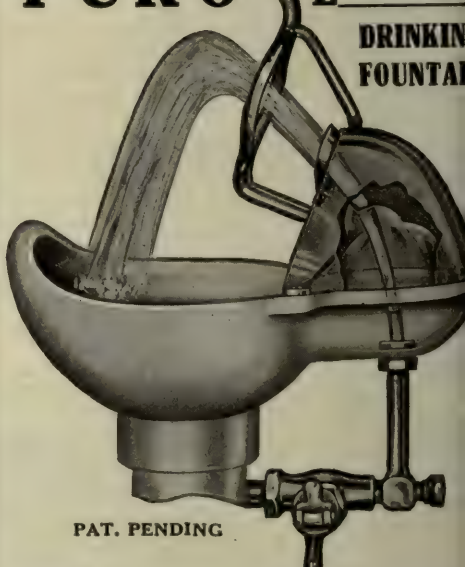
This should be the invitation from every municipality to its inhabitants. Now is the time to prepare the oasis before the desert of dryness surrounds us all. We specialize in fountains—a kind for every purpose.



Catalog upon request.

RUNDLE-SPENCE MFG. CO.
Milwaukee, Wis., U. S. A.

PURO LIBERTY
DRINKIN
FOUNTAI



PAT. PENDING

ONLY Sanitary Drinking Fountai
PURO SANITARY DRINKING FOUNTAIN CO.
Haydenville Mas

D. T. Pierce Returns from France

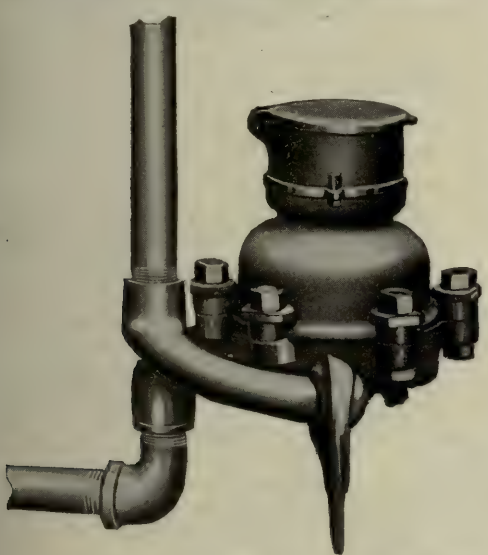
Daniel T. Pierce, formerly assistant to the President of the General Asphalt Company, has just returned from more than a year's service in France, and is located temporarily at Room 1031, 120 Broadway, New York. Mr. Pierce will represent important Franco-Italian interests and also act for American manufacturers seeking business in France and other European countries.

✣ ✣

A Basement Meter-Holding Yoke

An improved meter-holding yoke has been brought out by the McNutt Meter Box Company, of Brazil, Ind., well-known makers of meter settings and other appliances. The new appliance is for setting meters in basements where it is desired to place the meter on a vertical pipe, and it does away with a great deal of the labor previously involved in installations of this character.

The McNutt meter-holding yoke takes any standard ⅝-inch meter, or a ⅝-inch meter with ¾-inch spuds. There are no screw connections whatsoever. All the labor required is to cut out two inches of pipe, thread the ends and screw on the ells, and the meter is ready to set. It is not even necessary to hold the meter in place while it is tightened up, as the lips on the ells hold it.



AN AID TO SETTING METERS IN BASEMENTS

With the new yoke, the plumber can set many more meters per day than was possible with the old regular screw connections. Another excellent feature of the new McNutt yoke is the ease of handling during repairs. If repairs are necessary, all the plumber needs to do is to cut a piece of pipe, drop it in in place of the meter, and leave the service uninterrupted while the meter is being repaired.

Metal Articles for Municipalities

A trip thru the factory of the Niagara Falls Metal Stamping Works, at 235-247 Tenth Street, Niagara Falls, N. Y., impresses one with the great variety of articles that are specially manufactured for municipal use. Street name signs, house numbers, automobile numbers, bicycle tags, dog tax tags (one of these is illustrated herewith), vehicle license plates, police and miscellaneous badges, and many other metal specialties made of aluminum, brass and enameled steel are to be seen.

For street name signs, aluminum will be found to be a most satisfactory material. The aluminum in these signs is guaranteed to be 99 per cent pure, and will not rust, tarnish nor corrode. Letters and borders are finished in a good quality of enamel.



LET EVERY DOG CARRY HIS TAX RECEIPT

The company makes a specialty also of filling orders for articles not to be found in its regular lines. Parts are made of sheet steel, iron, brass, copper, zinc, tin or aluminum, or of bands, rods or wire of any of these metals. By the use of dies in power presses pieces of almost any shape can be cut. If holes are needed in these pieces they can be punched of any size or shape required. By the use of other dies in presses, one of these die-cut blanks can be bent, crimped, embossed, corrugated, made into a cylinder or a tube, a thimble or a dish, given curves or angles, stamped with letters or figures; and whether 500 or 50,000 are made with the same dies all will be practically alike when finished.

✣ ✣

Neptune Meter Company Starts a Canadian Company

The Neptune Meter Company of New York has acquired a building from the Russell Motor Car Company, of Toronto, Canada, in which the company intends to manufacture Trident water meters for Canadian trade. The President of the Neptune Company is J. Herbert Ballantine, and the Managing Director for the Canadian company is William H. Randall, formerly Superintendent of the Maintenance and Distribution Department of the Toronto water-works. The new plant is to be known as the Neptune Meter Company, Ltd.

✣ ✣

Army Captain Returns to Wallace & Tiernan Staff

Wallace & Tiernan Company, Inc., of New York City, announces that Capt. C. A. Jennings has received his discharge from the Construction Division, Utilities Branch of the Army, and has returned to the technical staff of the company to resume charge of the Chicago office. Capt. Jennings' work in the Army covered the supervision, operation and maintenance of water purification and sewage treatment plants in various camps.



'NOBBY CORDS' are big—husky—incredibly strong.

Trucks equipped with these tires show 50% less depreciation, and average 40% more mileage per gallon of gas than solid tires.

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

DISTRIBUTION TRANSFORMERS



FOR LIGHT AND POWER SERVICE
EFFICIENT LOW FIRST COST AND
MINIMUM UPKEEP

KUHLMAN ELECTRIC CO
BAY CITY, MICH.

THE GAMEWELL FIRE ALARM TELEGRAPH CO.



"Registered U. S. Patent Office"

Manufacturers of
Fire Alarm and Police Signal
TELEGRAPHS
for
Municipalities and Private Parties

The Gamewell system of to-day is the outcome of the combined inventive genius and mechanical skill of many whose valuable services the company has been able to secure during the past fifty-seven years, in pursuance of its policy of meeting at any cost the requirements of the varied conditions existing in different localities.

Correspondence Solicited.

General Office and Works:
Newton Upper Falls, Mass.



FIRESTONE

Pneumatic or Solid Tires For Horse or Motor-Driven Apparatus

MOST MILES PER DOLLAR

ECONOMY- -the low cost of fuel and tires, which shows on your record books—this you must have as well as efficiency. Both are insured by Firestone equipment. This combination of values explains why Firestone Tires are practically in universal use for Fire Apparatus, any size, any type.

Get in touch with your Firestone man.

FIRESTONE TIRE AND RUBBER CO.
FIRESTONE PARK AKRON, OHIO
BRANCHES AND DEALERS EVERYWHERE

Firestone
Pressed-On TIRE

Firestone



Bi-Lateral Fire Hose construction keeps the rubber from cracking or leaking. If you want the best fire hose at the lowest cost per year of service, send for our catalogue.

Bi-Lateral Fire Hose Co.
326 W. Madison Street Chicago, Ill.

We specialize in Equipment for Motor Fire Apparatus

Complete Stock of General Fire Department Supplies

Sole Manufacturers of
Anderson-Hale Fire Station Door Openers

Estimates Cheerfully Given

THE ANDERSON COUPLING AND FIRE SUPPLY COMPANY
Kansas City Kansas

Dayton Airless Tires

GUARANTEED
2½ YEARS

Made exclusively for Fire Department use.

Ride like Pneumatics
No Punctures
No Blowouts

Write for information

The Dayton Rubber Mfg. Co.
Dayton, Ohio

FABRIC FIRE HOSE

is of an unusually careful manufacture
WAX and PARA GUM TREATED

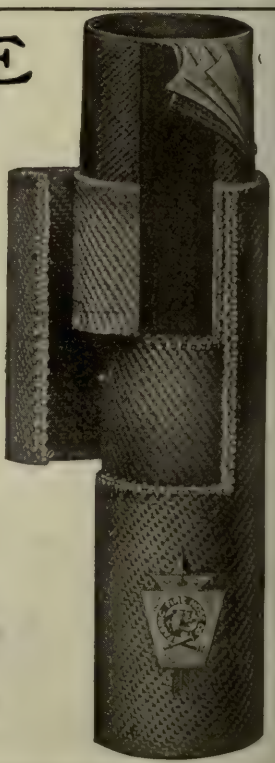
The lining is of fine Para Gum, hand made, four calendered, smooth bore or lap-jointed

Circular balance woven, each strand of cotton is treated to a bath of melted Wax and Para Gum, then cabled and woven into the jackets.

Absolutely waterproof, making the ideal hose for fire departments.

Treatment lubricates and solidifies the strands of cotton, assuring long wear.

Made in all sizes from 1 to 6 inches inside diameter.

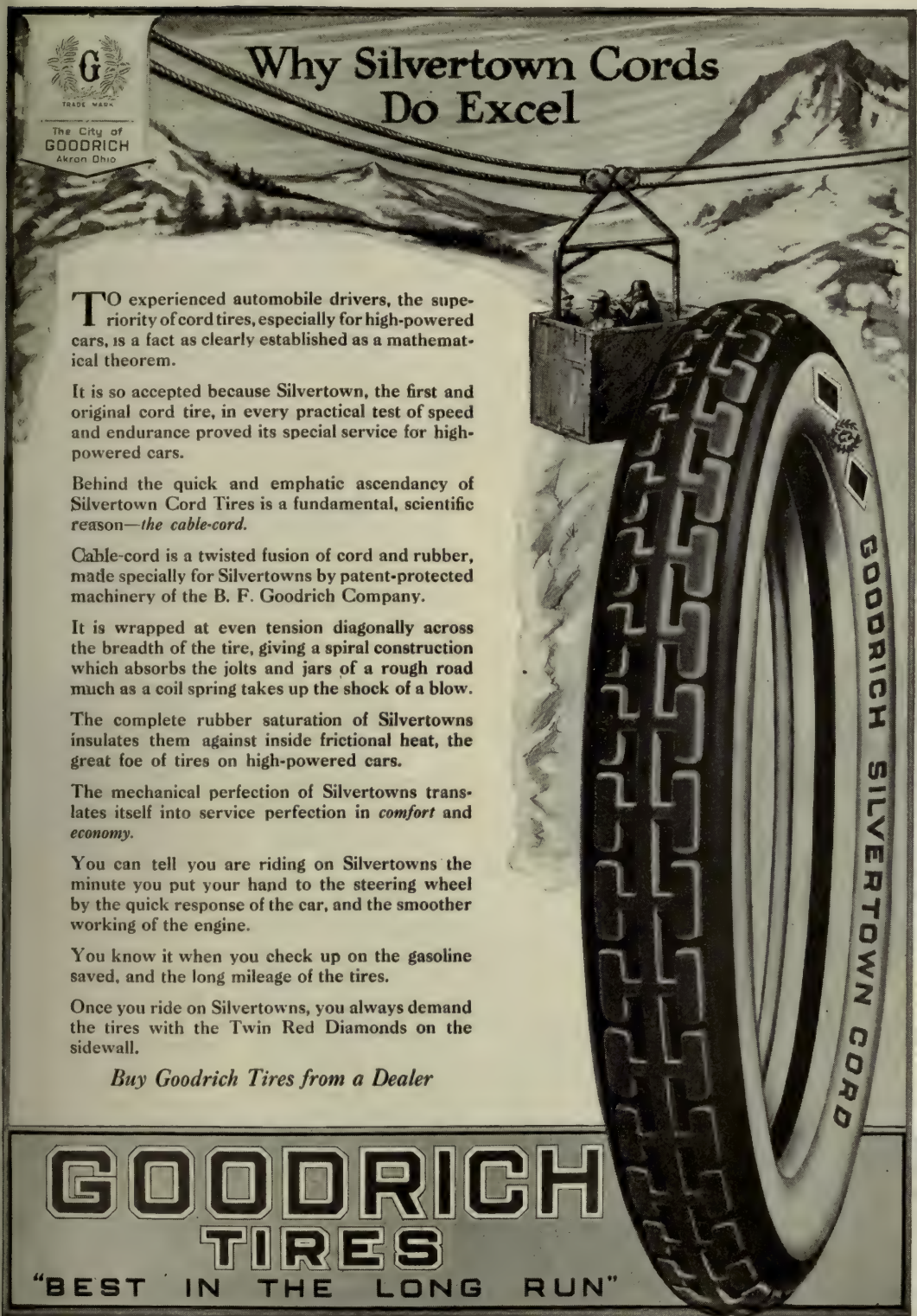


FABRIC FIRE HOSE CO.
COR. DUANE & CHURCH STS., NEW YORK

Branch Offices

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ATLANTA
COLUMBUS, O.
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BINGHAMTON, N. Y.
PITTSBURGH
NEWARK, N. J.
MONTREAL
PROVIDENCE
DALLAS, TEX.

Patentee and Sole Manufacturer



TO experienced automobile drivers, the superiority of cord tires, especially for high-powered cars, is a fact as clearly established as a mathematical theorem.

It is so accepted because Silvertown, the first and original cord tire, in every practical test of speed and endurance proved its special service for high-powered cars.

Behind the quick and emphatic ascendancy of Silvertown Cord Tires is a fundamental, scientific reason—*the cable-cord.*

Cable-cord is a twisted fusion of cord and rubber, made specially for Silvertowns by patent-protected machinery of the B. F. Goodrich Company.

It is wrapped at even tension diagonally across the breadth of the tire, giving a spiral construction which absorbs the jolts and jars of a rough road much as a coil spring takes up the shock of a blow.

The complete rubber saturation of Silvertowns insulates them against inside frictional heat, the great foe of tires on high-powered cars.

The mechanical perfection of Silvertowns translates itself into service perfection in *comfort* and *economy.*

You can tell you are riding on Silvertowns the minute you put your hand to the steering wheel by the quick response of the car, and the smoother working of the engine.

You know it when you check up on the gasoline saved, and the long mileage of the tires.

Once you ride on Silvertowns, you always demand the tires with the Twin Red Diamonds on the sidewall.

Buy Goodrich Tires from a Dealer

GOODRICH
TIRES
"BEST IN THE LONG RUN"

Four-Wheel Drive
Aerial Ladder Truck

Pneumatic Air Hoist
Automatic Ladder Lock

One man puts the ladders where you want them. No More Cranking.

Write for free booklet and list of users



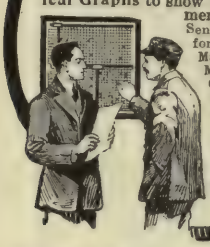
COUPLE-GEAR FREIGHT-WHEEL CO., 525 Buchanan Ave., GRAND RAPIDS, MICH.

EDEXCO
GLASS HEAD **MAP PINS**

Solid color glass heads. Steel points. Stay where put. 2 sizes—16 colors.

Used with city maps and Edexco Mechanical Graphs to show details of improvement work.

Send 30 cts., stamps or coin for Big Sample Package of Map Pins, EDEXCO Map Mount, Charting Papers, Curve Cards and Catalog. Catalog & Illustrated Booklet Free.



EDUCATIONAL EXHIBITION CO.
527 Custom House St.
Providence, R. I.

HOTEL HERMITAGE

Times Square
42nd Street & Seventh Avenue at Broadway
NEW YORK

Three Minutes from Pennsylvania Station

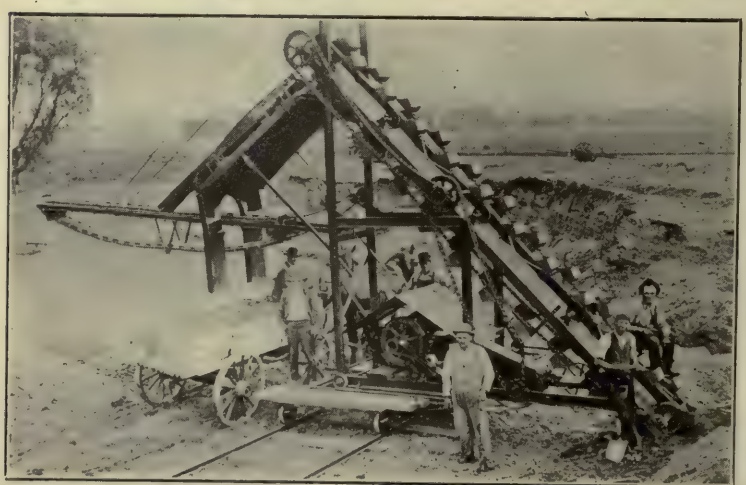
Three Minutes from Grand Central Station

Rates $2.00 to $3.50

The management of the HERMITAGE is now under the personal supervision of its proprietor—Frank C. Hurley.

Formerly with Auditorium and Chicago Athletic Club, Chicago; the Denison Hotel and Columbia Club, Indianapolis.

The Michigan Jr., Gravel Screen and Loader



The Michigan Jr. Gravel Screener and Loader will save $20.00 to $30.00 every working day. Travels on track by own power, requiring no extra men to scrape gravel to machine. The Loader delivers the screened gravel next to the machine and the sand and stones separately twenty feet away where they will not have to be moved. County Road Commissions, Township Boards and City Officials should write for free literature regarding the Michigan Jr., which will be sent without obligation.

THE JORDAN & STEELE MFG. CO., CHARLOTTE, MICH.





Camp Hancock, Ga. 1 American-LaFrance



Ft. McPherson, Ga. 3 American-LaFrance

OUR WAR RECORD



Camp Dix, N. J. 4 American-LaFrance



Camp Custer, Mich. 5 American-LaFrance



amp Gordon, Atlanta, Ga. 2 American-LaFrance



Merchant Shipb'd'g Corp., Bristol, Pa. 2 Am.-LaFranc

NOTHING TALKS LIKE ACTUAL PERFORMANCE

WE can now look back calmly at our remarkable war record.

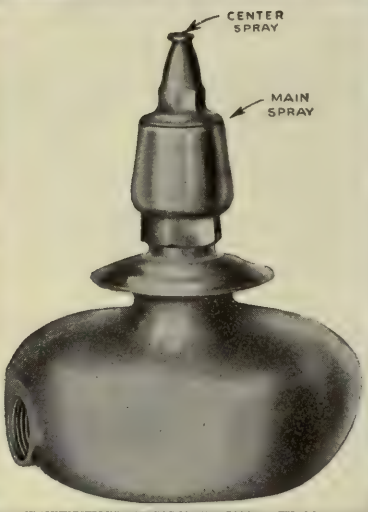
¶ In twenty-six of our great army camps scattered over the country, there are fifty-three pieces of American-La-France motor fire apparatus.

¶ There are seventy-three pieces located at forty-seven other points which demand the utmost in fire protection—ship yards, hospitals, forts, munition plants, and so on.

AMERICAN-LaFRANCE FIRE ENGINE COMPANY, INC.

ELMIRA, N. Y., U. S. A.

SPRACO



Showing the Young Fountain with the Unique Spraco Centre Jet Principle

For medium sized lawns around Municipal Buildings and newly seeded grounds. A GIANT for work. Has no moving parts. Substantial, nothing to wear out or break.

Distributes uniformly 5 to 25 gallons per minute according to adjustment, covering an area of 25 to 60 feet in diameter.

Easily moved—NOT easily overturned

Irrigation Bulletin on request

Spray Engineering Co.
Boston, Mass.





This Federal Electric Sign Pays Big Dividends

Read what E. A. Bradbury, secretary of the Canon City Chamber of Commerce, says of the sign shown above:

"Our sign is located close to the railroad tracks immediately adjoining the depot and is very attractive. We consider that it has been a splendid advertisement for our city."

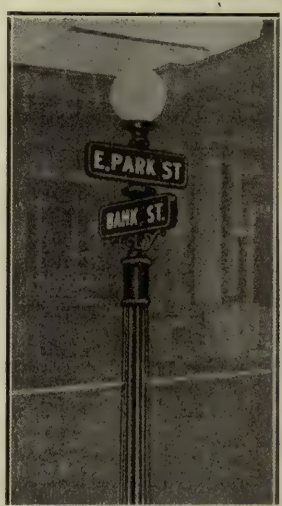
ADVERTISE *YOUR* TOWN

A Federal Electric Sign sets YOUR town apart as a live, progressive community and tells your city's story to every transient traveler day or night. Federal Electric Signs are durable and inexpensive, both as regards initial cost and operation. Let us give you full particulars.

WRITE NOW

FEDERAL SIGN SYSTEM (ELECTRIC)
LAKE AND DESPLAINES STREETS
CHICAGO

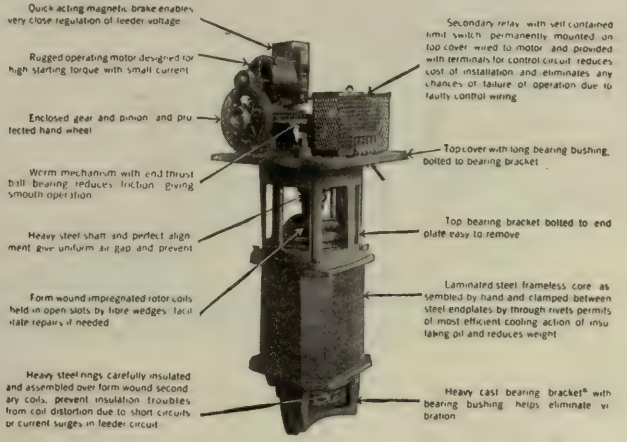
SIGNS OF QUALITY *and* PERMANENCE



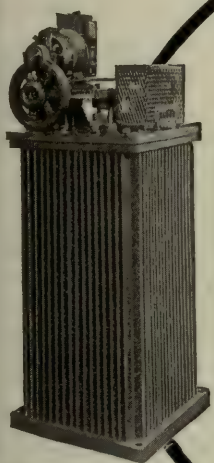
YOU are called upon to improve your highways, streets and pavements. These will not be complete until the question of placing proper signs on them has been decided; and when considering highway and street signs it is for your interest to give first thought to attractiveness and permanency—in other words, don't do that which you will be required to do over again in a few years. All we ask of you is to request our catalog, showing combination street sign and lighting standards, traffic signs with electric light or without, highway and junction guideboards, school, danger and railroad-crossing warning signs that are always efficient and a decided credit to any community.

WRITE FOR CATALOG

THE LEBANON MACHINE CO.
Highway Directory Engineers
LEBANON NEW HAMPSHIRE



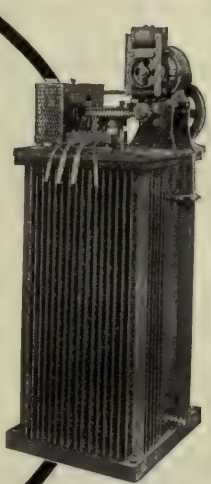
Single Phase Regulator removed from tank
(Note Complete Accessibility)



Above are given some of the reasons for the unrivalled service record of Westinghouse Type C Induction Feeder Regulators. Note particularly the rugged mechanical construction, the heavy bracing of the stator coils and the unique core construction giving free oil circulation.

For more information see or write for leaflets 3916 and 3937

Westinghouse Electric & Mfg. Company
EAST PITTSBURGH, PA.



Complete Regulator. Front View.

Complete Regulator Rear View.

Westinghouse

ATTENTION——

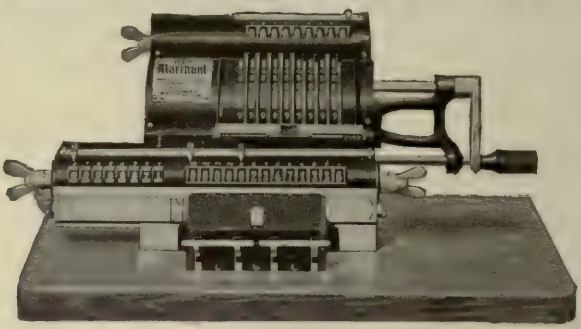
CITY CLERKS——ENGINEERS——AUDITORS

Are you getting a maximum of results in your calculating or are you spending your budget on wasteful hand figuring in handling the city records.

SIMPLICITY

DURABILITY

EFFICIENCY



CAN BE HANDLED BY ANY ONE IN THE OFFICE

The Pony Marchant Calculator

Used and endorsed by City and County officials in every part of the United States.

"Guaranteed accuracy" in mathematics—shows the proof of every operation.

MARCHANT CALCULATING MACHINE COMPANY

EMERYVILLE OAKLAND, CAL.

Eastern Sales Offices, 237 Railway Exchange Bldg., Chicago

Beauty and Safety

For

City Parks, Play Grounds
Retaining Walls
Jails and Courtyards
Cemeteries, Reservoirs
and Bridges

are both assured in

STEWART'S IRON FENCE

"The Standard of the World"



AGENT WANTE

Chicago recognizes Stewart value and has installed approximately 45,000 feet of Stewart fence and 50 pairs of gates of the design here illustrated.

The Stewart Catalog will be a valued help to officials and others interested in the city improvement.

The Stewart Iron Works Co., Inc., No. 527 Stewart Block CINCINNATI, OHIO.

The World's Greatest Iron Fence Builders

Request the Catalo

showing a wide selectio of designs for purpose mentioned—also line o Lamp Standards, Bracke Lanterns, Settees, Vases an ornamental iron & wire wor

The House of Sunshine

Hotel Hamilton

73d St., bet. Col. Ave. & B'dway

New York City

An ideal family hotel situated in a refined section, catering to a select clientele. All the comforts of a private home without housekeeping cares.

A Short Distance from the Leading Shops, Theatres, etc.



A National Reputation

The exigencies of war put a peremptory curb on really necessary construction work. Today that work is doubly necessary because your plants have borne the strain of extra-burden with old equipment and no chance for renewal.

Reconstruction time has come. Surely there never was a better time than now for abolishing forever the nuisance and danger of overhead wires. Put your wires underground. Use Orangeburg Fibre Conduit because it's the best.

Booklet D tells why.

THE FIBRE CONDUIT COMPANY
ORANGEBURG, N. Y.
New York Boston Chicago San Francisco



Now Is the Time To Use

the best material available to lay the dust, to act as a binder and also to rid streets and roads of weeds. No liquid is so efficient nor as cleanly as the dry chemical salt

SOLVAY

Granulated

Calcium Chloride

It makes the road surface smooth, resilient, dustless, and reduces the sun-glare.

Can be successfully applied by ordinary workmen without interfering with traffic. Will not stain or injure varnish, tires or shoes—and is absolutely odorless.

Send for your copy of the "Solvay Road Book," mailed free upon request.

SEMET-SOLVAY CO.
410 Milton Ave. Solvay, N. Y.


Grace, beauty and permanence distinguish this pole with its Patent Non-Fouling Ball-Bearing Top. An attractive feature of country estate, club or park, of bank, church, public building or factory.
WALWORTH STEEL FLAG POLE
Made in heights up to 100 feet above the ground.
The top revolves freely making it practically impossible for the flag to wrap around the pole.
Write for descriptive catalogue and information regarding free detail working drawings for building artistic concrete base.
WALWORTH MANUFACTURING CO.
801 E. First St. 96-7 Boston, Mass.

THE FUN-FUL LINE
PLAYGROUND EQUIPMENT

WE ARE READY NOW TO GO AHEAD WITH THAT PLAY-GROUND DEVELOPMENT POSTPONED ON ACCOUNT OF THE WAR. ARE YOU?

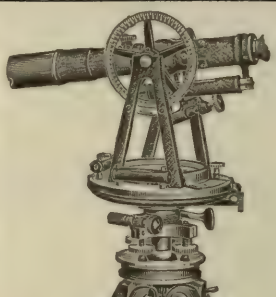
e have "Everything for the Playground"

INCLUDING SLIDES, SWINGS, OCEAN WAVES, SEE-SAWS, GIANT STRIDES, OUTDOOR GYMNASIUM COMBINATIONS, ETC. ALSO A COMPLETE LINE OF ATHLETIC GOODS AT WHOLESALE PRICES. LET US FURNISH PLANS, SPECIFICATIONS AND ESTIMATES FOR YOUR ENTIRE DEVELOPMENT.

We are Recreation Engineers

WRITE FOR FREE BOOK

ILL-STANDARD COMPANY
FUN-FUL AVENUE ANDERSON, INDIANA



Any Engineer

who is contemplating the purchase of a Transit is invited to test a "KOLESCH," on his own work, for two weeks before purchasing.

KOLESCH SURVEYING INSTRUMENTS

are designed to meet the requirements of Municipal Engineers. **Transit No. 7710** shown is particularly well suited for road, street and sewer work, and work investigating.

WRITE FOR FULL PARTICULARS

We will be pleased to quote on your present needs.

KOLESCH & CO., 138 Fulton St., New York

BUFF

ENGINEERING INSTRUMENTS

are the strongest, most accurate and longest-lived Instruments built. The close accuracy, high grade materials and superior workmanship have made the Buff the recognized standard. *Write for catalog No. 4.*



BUFF & BUFF MFG. CO. Jamaica Plains, BOSTON, MASS.

221 Lamartine Street — 231 N. Wells Street, Chicago, Ill.

The ELGIN Line

MOTOR DRIVEN STREET CLEANING MACHINERY

ELGIN SALES CORPORATION

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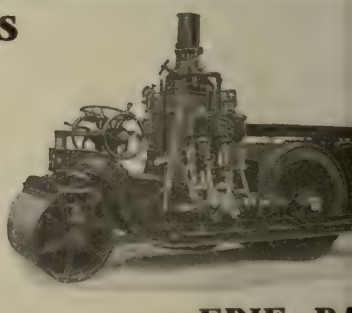
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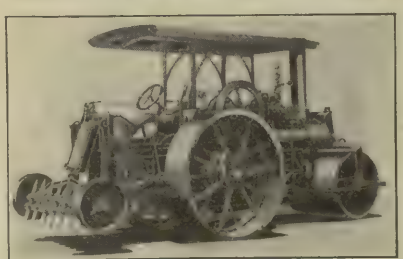
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he Monarch Distributor. This machine can be ounted on an auto truck if desired. Will pread any quantity from one-tenth of a gallon per square yard upwards.

It preserves the surface. Keeps it from raveling and blowing away in dust.

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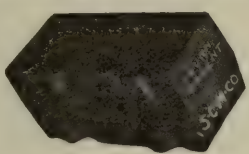
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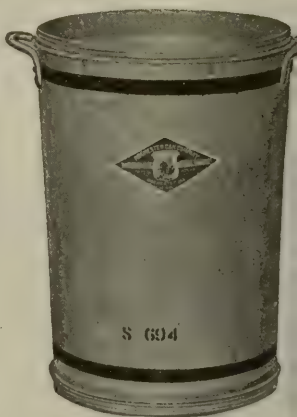
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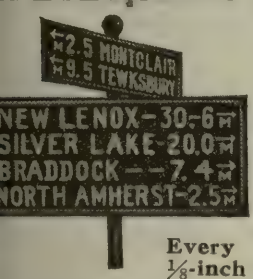
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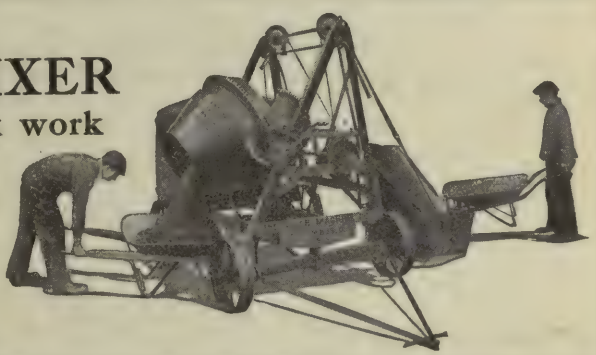
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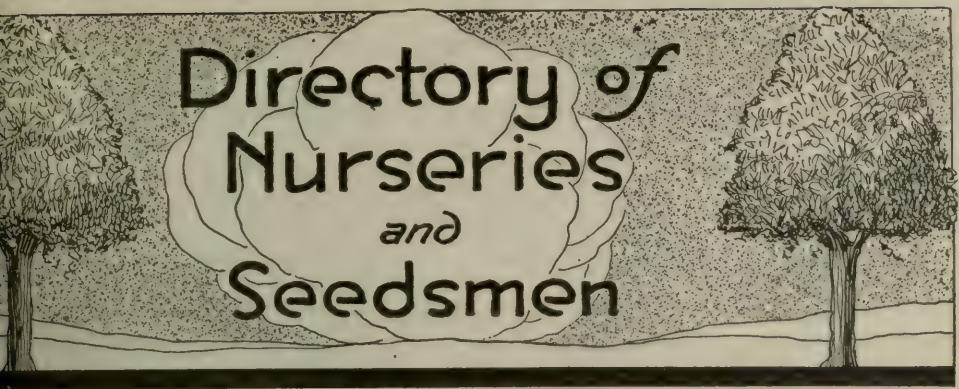
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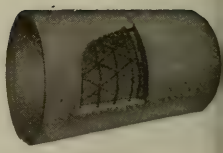
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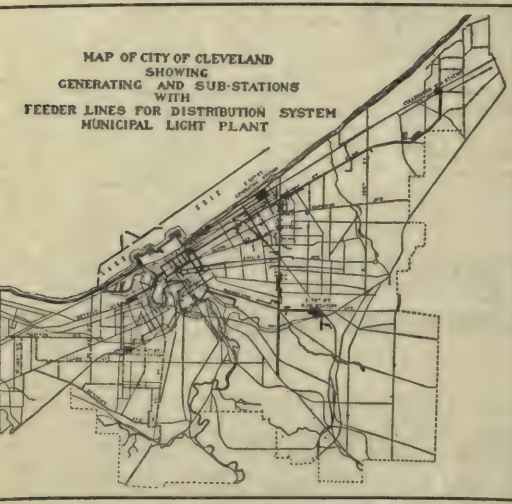
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Expert Advice and Service for Park Departments

We put business methods in park maintenance and development.
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SURVEYS.
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POLLOCK AND TABE
CONSULTING ENGINEERS
Pavements, Highways, Water Sup
Drainage, Sewerage and Sewage Disp
Designs, Specifications and Supervisi
CLARENCE D. POLLOCK, GEORGE A. TABER } Member Am. Soc. C
Park Row Building, New York C

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(Hudson Terminal) Tel., Cortlandt

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Thoroughfares—Transportation

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100 State Street, Albany, N.Y
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pervision of Construction and Mainten

addell & Son
nsulting Engineers
e Bridges, Reinforced Concrete and ructures, Elevated Railways, Reports, g of Plans, Advisory Services and al.
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rk Office, 35 Nassau Street.

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NOTICE

NOTICE IS HEREBY GIVEN that the Board of City Commissioners of the City of Minot, N. D., will receive bids for the following supplies:—

One Triple Combination 1,000 gallon Pump.

One Squad Wagon with two 40 gallon chemicals, body to have capacity for carrying 800 feet of hose and eight men.

Bids for the above will be received up to 8 o'clock P. M., June 2, 1919, and should be addressed to A. D. Hagenstein, City Auditor. All bids must be accompanied by certified check in the sum of $500.00 made payable to W. S. Shaw, President of the Board of City Commissioners.

By order of the BOARD OF CITY COMMISSIONERS.

By A. D. HAGENSTEIN, City Auditor

prinkling Wagons For Sale

25 Second Hand Studebaker Sprinkling Wagons can be secured at an attractive price. If interested in this opportunity write to

dvance Paint Co.
lorwood and California Sts.
Indianapolis, Ind.

LIVE CHAMBER OF COMMERCE SECRETARY

Civil Engineer, Law Training, several years' experience as Chamber of Commerce Secretary, good organizer, now employed, wishes to make a change. Would accept position as City Manager. Nothing less than 3,000 considered. West or Middle West preferred. Address Box 66, care THE AMERICAN CITY.

Experienced Man

with fifteen years in Y. M. C. A. and Community work desires to make a change. Would like position as Supervisor of Community or Civic Association building or Industrial Social Center. References furnished. Box 1044D, "The American City."

City Manager Position

wanted by university man in charge municipal reference and research bureau with successful experience as secretary of a strong state league of municipalities.

Address American City Box 68.

Wanted
CITY MANAGER
For Boulder, Colorado.
Give full information in first letter.
F. C. MOYS, Mayor

The Municipal Buyers' Guide

A classified reference index of advertisers in this issue of The American City

The alphabetical index of advertisers which follows this list (see page 114) will give you the page numbers of all advertisements, thus enabling you to secure the full address of the advertisers, as well as other information which may be of value.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 114

Aerial Ladder Trucks.
American-La France Fire Engine Co.
Couple-Gear Freight Wheel Co.

Air Compressors.
Allis Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Co.
Worthington Pump & Mach. Corp.

Air and Gas Washers.
Spray Engineering Co.
Talbot Air Lift Co.

Ambulances.
Studebaker
White Co., The.

Arc Lamps.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Armored Concrete Pavements.
Truscon Steel Co.

Asbestos.
Carey Co., Philip.

Asphalt.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Carey Co., Philip.
Standard Oil Co. of Indiana
Standard Oil Co. of N. J
Texas Co.
Warren Bros. Co.

Asphalt Blocks.
Barber Asphalt Paving Co.

Asphalt Machinery.
Barber Asphalt Paving Co.
Connery & Co., Inc
Equitable Asphalt Maintenance Co.
Erie Machine Shops
Littleford Bros.
Warren Bros. Co.

Automobile Fire Apparatus.
American-La France Fire Engine Co.
Anderson Coupling & Fire Sup. Co.
Autocar Co., The
Couple-Gear Freight Wheel Co.
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Studebaker
White Co., The

Automobile Lubricants.
Dixon Crucible Co., Joseph

Belt Dressing.
Dixon Crucible Co., Joseph

Blue Print Paper and Machines.
Kolesch & Co.

Braces, Extension.
Bond & Co., Harold L.

Brass Goods.
Anderson Coupling & Fire Sup. Co.
Clark Co., H. W.
Smith Mfg. Co., A. P.
Union Water Meter Co.

Brick, For Paving.
Dee Co., Wm. E.
Metropolitan Paving Brick Co
Southern Clay Mfg. Co.

Buildings (Steel Office & Mill)
Pittsburgh-Des Moines Steel Co.

Busses, Motor.
Denby Motor Truck Co.
Four Wheel Drive Auto Co.
Studebaker
White Co., The.

Calcium Chloride.
Saginaw Chemical Co.

Calculating Machines.
Marchant Calculating Machine Co.
Monroe Calculating Machine Co.

Campaigns for Commercial Organizations.
American City Bureau.

Cans for Ashes and Garbage.
Buffalo Municipal Equipment Co.
Newport Culvert Co.
Rochester Can Co.
Steel Basket Co.

Cast Iron Pipe
American Cast Iron Pipe Co.
Central Foundry Co.
Clow & Sons, J. B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry Co.
Lynchburg Foundry Co.
Massillon Iron and Steel Co.
U. S. Cast Iron Pipe & Fdry. Co
Warren Foundry & Machine Co
Wood & Co., R. D.
Zelnicker Supply Co., Walter A.

Catch Basins.
Buffalo Municipal Equipment Co.
Clark Co., H. W.
Dee Co., Wm. E.
U. S. Cast Iron Pipe & Foundry Co.
Zieg Mfg. Co., F. B.

Catch Basin Cleaning Apparatus.
Otterson Auto-Eductor Co.
Springfield Engineering Co.

Caulking Machinery.
Smith Mfg. Co., A. P.

Caulking Materials.
Leadite Co.
United Lead Co.

Cemcoat.
Sonneborn Sons, Inc., L.

Cement.
Alpha Portland Cement Co.
Pennsylvania Cement Co.

Cement Inspection.
Allentown Testing Laboratories

Cement Machinery.
Allis Chalmers Mfg. Co.

Centrifugal Pumps.
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
Worthington Pump & Mach. Corp
Yeomans Bros. Co.

Check Valves.
Columbian Iron Works.

Chemical Analysis.
Allentown Testing Laboratories.

Chemical Engines.
American-La France Fire Eng. Co.
Anderson Coupling & Fire Sup. Co.

Chemicals for Water Purification.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Great Western Electro Chem. Co.
Hooker Electrochemical Co.
Pennsylvania Salt Mfg. Co.
Wallace & Tiernan Co., Inc.

Chlorine, Liquid.
See Liquid Chlorine.

Coal Tar.
Barrett Co., The
Carey Co., Philip.

Cold Storage and Refrigeration Systems.
Spray Engineering Co.

Concrete Mixers.
Jaeger Machine Co.
Northwestern Steel & Iron Work
Worthington Pump & Mach. Co
Zieg Mfg. Co., F. B.

Concrete Pipe Form.
Northwestern Steel & Iron Work

Conduit Rods.
Bond & Co., Harold L.
Turbine Sewer Machine Co.

Conduits.
Fibre Conduit Co.
Pacific Tank & Pipe Co.

Contractors' Equipment.
Austin-Western Road Machy. C
Autocar Co., The
Baker Mfg. Co.
Barber Asphalt Paving Co.
Beach Mfg. Co.
Bond Co., Harold L.
Connery & Co., Inc
Federal Motor Truck Co.
General Motors Truck Co.
Good Roads Machinery Co
Haiss Wagon Loader Co.
Jordan & Steel Mfg. Co.
Lyle Corrugated Culvert Co.
Littleford Bros
Northwestern Steel & Iron Work
Russell Grader Mfg. Co.
Zieg Mfg. Co., F. B.

Contractors for Water Main Cleaning.
National Water Main Cleaning C

Controllers, Rate.
Simplex Valve & Meter Co.

Creosoted Wood Block Pavemen
Barber Asphalt Paving Co.
Republic Creosoting Co.

Culverts.
American Cast Iron Pipe Co
Dee, Wm. E., Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Northwestern Steel & Iron Work
Truscon Steel Co.
Union Iron Products Co.
U. S. Cast Iron Pipe & Foundry C
Wood & Co., R. D.
Zieg Mfg. Co., F. B.

Curb Bars.
International Steel Tie Co.
Truscon Steel Co.

Curb Boxes.
Clark Co., H. W.

Current Meters.
Westinghouse Electric & Mfg. C

Disinfecting Chemicals.
Electro Bleaching Gas Co.

Drawing Instruments and Supplies.
Economy Drawing Table & Mfg.
Kolesch & Co.

Dump Bodies.
Denby Motor Truck Co.

Dump Boxes.
Eagle Wagon Works
Glen Wagon & Car Corp.

Continued on page 106

ow good are you at filling "brain-gaps"?

times 2 is 18 Put down 8 and carry 1
times 4 is 36 and 1 make 37 Put down 7 and carry 3
times 3 is 27 and 3 make 30 Put down 0 and carry 3
times 6 is 54 and 3 make 57 Put down 7 and carry 5
times 4 is 36 and 5 make 41 Put down 41

econd line:

times 2 is 12 Put down 2 and carry 1
times 4 is 24 and 1 make 25 Put down 5 and carry 2
times 3 is 18 and 2 make 20 Put down 0 and carry 2
times 6 is 36 and 2 make 38 Put down 8 and carry 3
times 4 is 24 and 3 make 27 Put down 27

low add:

ut down 8 2 and 7 are 9 Put down 9 5 and 0 are 5
ut down 5 0 and 7 are 7 Put down 7 8 and 1 are 9
ut down 9 7 and 4 are 11 Put down 1 and carry 1
and 2 are 3 Put down 3

58 chances to make a mistake in this simple problem in multiplication!

46342 × 69 = ?

See how quickly you can do this

In a series of speed tests made among business and professional men doing this problem, results showed:—from 15 to 20 seconds is excellent, from 20 to 30 seconds is good, more than 30 seconds is poor. The average of six college graduates was 21 seconds. Try it yourself.

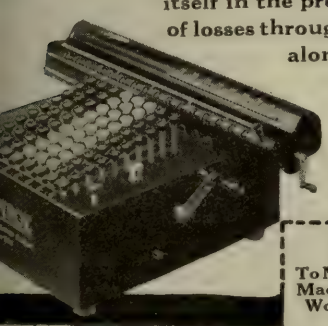
46342
69

is is a "picture" of what your brain goes through ry time you use the ordinary pad-and-pencil thod.

ACH one of these 58 steps represents a figure space — a "brain-gap" — to be ed in by the mind—and is therefore a chance error. We have shown here only an exple in multiplication. Division is even more nplex. Addition and subtraction constantly ite errors.

All over the world today men and women through these laborious mental operations ich are but a means to an end—the answer. doubt you yourself waste many precious nutes with pencil and scratch pad, multiring, dividing, adding, subtracting. So does eryone else.

Any owner will tell you that a Monroe lculating Machine quickly pays for itself in the prevention of losses through errors alone.



The above problem, which takes the average man 28 seconds to perform with "brain and pencil", is solved *in five seconds or less*, with a Monroe Calculating Machine which—

not only adds, but multiplies, divides and subtracts as easily as other machines add.

The Monroe gives you *direct operation* and *a visible check* of accuracy on all problems.

MONROE CALCULATING MACHINE CO.
Woolworth Building, New York
Offices in all principal cities

MONROE
Calculating Machine



Cut Out and Mail this Coupon TODAY

To Monroe Calculating Machine Co.
Woolworth Building
New York

Please send me further facts concerning the Monroe and how it will save time in the figure work of my business. AC-5-19

(Use space below for your name and address)

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 11

Dump Carts and Wagons.
Austin-Western Road Machy. Co.
Eagle Wagon Works.
General Motors Truck Co.
Glen Wagon & Car Corp.
Holzbog & Bro., Geo. H.
Studebaker
Watson Wagon Co.

Dust Laying Compounds.
Barrett Co., The.
Dustoline for Roads Co.
Saginaw Chemical Co.
Semet-Solvay Co.
Standard Oil Co. of Indiana
Standard Oil Co. of N. J.

Electric Current Meters.
General Electric Co.

Electric Generators and Motors.
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Lamps.
Cutter Co., George
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Lighting Plants.
Fairbanks, Morse & Co.

Electrical Supplies.
General Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Transformers.
Kuhlman Electric Co.

Enameled Iron Signs.
Baltimore Enamel & Novelty Co.
Enameled Iron Sign Co.

Engineers' and Surveyors' Instruments.
Buff & Buff Mfg. Co.
Kolesch & Co.

Engineers, Consulting.
Albright & Mebus.
Allentown Testing Laboratory
Allis-Chalmers Mfg. Co.
Alvord, John W., & Brudick, Chas.
Archer & Stevens
Ballard & Co., F. W.
Bamman, F. C.
Black & Veatch.
Blanchard, A. H.
Brossman, Chas.
Burnap, Geo.
Burns & McDonnell.
Caird, James M.
Chester & Fleming.
Cravath, J. R.
Dunham-Clarin Co.
Flood, Walter H.
Fuller & McClintock.
Gage, Benj. E.
Gannett, Seelye & Fleming.
Greeley, Samuel A.
Hansen, A. E.
Harding, James.
Hazen, Whipple & Fuller.
Hering, Rudolph.
Higgins, J. Wallace.
Hopkins, Charles C.
Kesner, Myron A.
Knowles, Morris.
Koch & Fowler.
Ludlow, J. L.
Marr Green & Co.
Mitchell, Hugh C.
Pollock & Taber
Potter, Alexander.
Potts, Clyde.
Robinson, Geo. L.
Scofield Engineering Co.
Stillman & Van Siclen
Taylor, Henry W.
Waddell & Son
Wingfield, Nisbet

Engine, Gas. (See Gas Engines.)

Exhibition Material
Educational Exhibition Co.

Expansion Joint Material.
Barber Asphalt Paving Co.
Barrett Co., The.
Carey Co., Philip.
Robertson Co., H. H.
Truscon Steel Co.

Fencing.
Enterprise Iron Works.
Stewart Iron Works Co.

Fertilizers.
Dreer, Henry A.

Filters-Feed Water.
Pittsburgh Filter & Engineering Co.

Filtration Plants.
N. Y. Continental-Jewell Filtra. Co.
Norwood Engineering Co.
Pittsburgh Filter & Engineering Co.

Fire Alarm Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Fire Alarm Signal, Electric.
Federal Sign System.

Fire Alarm Signals, Steam.
Union Water Meter Co.

Fire Alarm Systems.
Gamewell Fire Alarm Telegraph Co.

Fire Department Apparatus.
American-LaFrance Fire Engine Co.
Autocar Co., The
Couple-Gear Freight Wheel Co.
Denby Motor Truck Co.
Federal Motor Truck Co.
General Motors Truck Co.
Studebaker.
White Co., The.

Fire Department Supplies.
American La France Fire Engine Co.
Anderson Coupling & Fire Sup. Co.

Fire Extinguishers, Chemical.
American-LaFrance Fire Engine Co.
Anderson Coupling & Fire Sup. Co.

Fire Hose.
Anderson Coupling & Fire Sup. Co.
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Rubber Co., B. F.

Fire Pumps.
Fairbanks, Morse & Co.
Worthington Pump and Machinery Corporation.

Flag Poles.
Walworth Mfg. Co.

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Fountains.
Clow & Sons, James B.
Puro Sanitary Drinking Foun. Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Furnaces, Melting.
Leadite Co.

Garbage Cans—See Cans for Ashes and Garbage.

Garbage Wagons.
Austin-Western Road Machy. Co.
Autocar Co., The
Denby Motor Truck Co.
Eagle Wagon Works
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Glen Wagon & Car Corp.
Holzbog & Bro., Geo. H.
Studebaker.
Watson Wagon Co.
White Co., The.

Gas, Chlorine.
Electro Bleaching Gas Co.

Gas Engines.
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
Foos Gas Engine Co.
Worthington Pump & Mach.

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Leadite Co.

Gas Meters.
General Electric Co.
Pittsburgh Meter Co.

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Fairbanks, Morse & Co.
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Gasoline Storage Tanks.
Bowser & Co., Inc., S. F.

Gates For Parks and Cemeteri
Enterprise Iron Works.
Stewart Iron Works Co.

Gauges, Loss of Head, Rate of
Simplex Valve & Meter Co.

Gauges—Surface, Reservoir Special Water Works.
Clark Co., H. W.
Simplex Valve & Meter Co.

Graders.
Austin-Western Road Machy.
Beach Mfg. Co.
Lyle Corrugated Culvert Co.
Russell Grader Mfg. Co.
Union Iron Products Co.
Zieg Mfg. Co., F. B.

Graphite.
Dixon Crucible Co., Joseph.

Grass Seed.
Burpee Co., W. Atlee.
Dreer, Henry A.
Thorburn & Co., J. M.

Health and Amusement Dev
American Playground Device
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg. Co.. Fred.

Heating Kettles.
Connery & Co., Inc.
Littleford Bros.

High Pressure Hydrants.
Clow & Sons, James B.
Smith Mfg. Co., A. P.

Hoists.
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.

Hose.
Anderson Coupling & Fire Su
Bi-Lateral Fire Hose Co.
Fabric Fire Hose Co.
Goodrich Rubber Co., B. F.

Hot Mixers.
Barber Asphalt Paving Co.

House Numbers.
Baltimore Enamel & Novelty
Buffalo Municipal Equipmen

Hydrants.
Clow & Sons, James B.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Norwood Engineering Co.
Rensselaer Valve Co
Smith Mfg. Co., A. P.
Wood & Co., R. D.

Indicator Posts.
Clow & Sons, James B.
Columbian Iron Works.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.

Continued on page 108

Reduce Operating Costs

In Water, Gas and Lighting Plants By Filtering Oil.

wser Oil Filtering and cir- ating Systems invariably w a great saving in lubricat- oil, because every drop of is made to do full duty.

ere is no loss, the oil is fed the bearings in a plentiful, dy stream. This means cient lubrication. The sur- s oil is drained back to the r, thoroughly cleaned and l again and again.

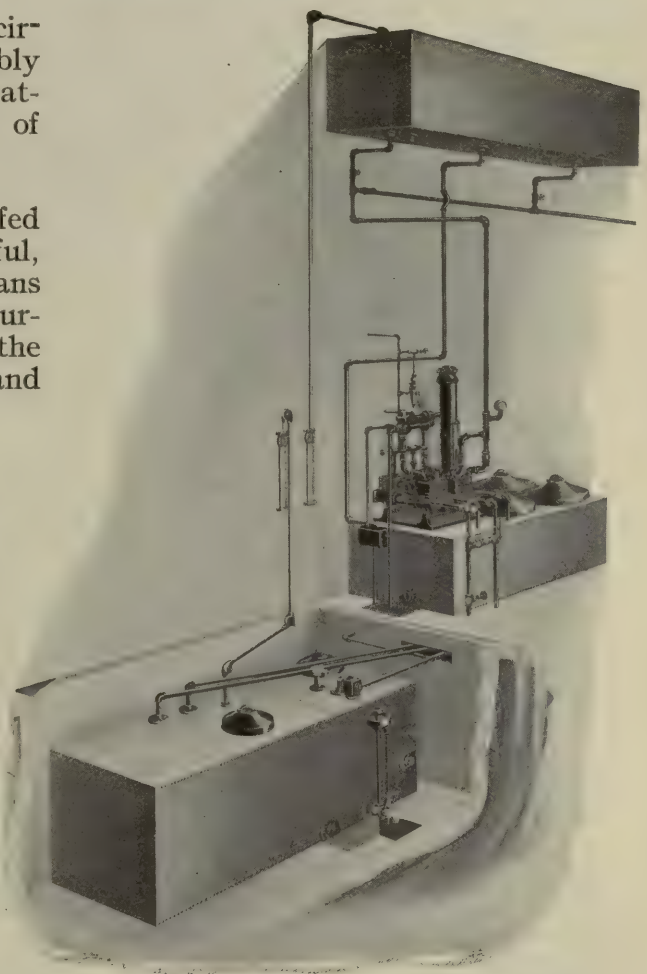
BOWSER ESTABLISHED 1885

SYSTEMS

for themselves (often in the year) and continue to re- a handsome profit on the stment. They are so nearly matic in action, they re- e but little attention.

re are Bowser Oil Filtering ems for all sizes and types ngines and to meet varying litions, of installation.

te us for literature explaining Bowser principle of oil tion.



Bowser 6-F Type Oil Filtering and Circulating System especially designed for use where engines are located on ground floor, in basements or pits.

S. F. Bowser and Company, Inc.

FORT WAYNE, INDIANA, U. S. A.

Branch Offices in 21 Cities of the United States

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Canadian Office and Factory
TORONTO, ONT.

PARIS
5 Rue Denis-Poissons

SYDNEY
Castlereagh St.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 114

Insulating Materials.
Barrett Co., The.
Carey Co., Philip.
General Electric Co.
Westinghouse Electric & Mfg Co.

Insulated Wire and Cable.
General Electric Co.
Hazard Manufacturing Co
Simplex Wire & Cable Co.

Jail Cells and Jail Work.
Stewart Iron Works Co.

Joints, Flexible.
Coldwell-Wilcox Co.

Kettles, Tar and Asphalt.
Connery & Co., Inc.

Landscape Architects.
American Park Builders
Arnold, Sheffield A.
Arnold & Tripp.
Cole, Louis S.
Cullen, Wm. E.
Davey Tree Expert Co.
Higgins, I. Wallace.
Koch & Fowler.

Lapidolith.
Sonneborn Sons, Inc., L.

Lawn Mowers.
Austin Western Road Machy. Co.
Pennsylvania Lawn Mower Works.
Shawnee Mower Co.

Lawn Sweepers.
Everwear Mfg. Co.
Pennsylvania Lawn Mower Co.

Lead Furnaces & Caulking Tools.
Smith Mfg. Co., A. P.

Leadite.
Leadite Co.

Lead Wool.
United Lead Co.

Leak Finders.
Clark & Co., H. W.
Pitometer Co.

Lighting Standards.
Clow & Sons, James B.
Cutter Co., George.
Electric Railway Equipment Co.
Stewart Iron Works Co.
Union Metal Mfg. Co.

Liquid Chlorine.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Electro Bleaching Gas Co.
Great Western Electro Chem. Co.
Hooker Electrochemical Co.
Pennsylvania Salt Mfg. Co.
Wallace & Tiernan Co., Inc.

Lubricants.
Dixon Crucible Co., Joseph.

Manhole Covers.
Clark Co., H. W.
Clow & Sons, James B.
Columbian Iron Works.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Memorials for Soldiers, Etc.
Lebanon Machine Co.

Merry-Go-Rounds.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg., Co. Fred.

Metal Preservatives.
Dixon Crucible Co., Joseph.

Meter Books.
Buffalo Meter Co.
Pittsburgh Meter Co.

Meter Boxes.
Buffalo Meter Co.
Clark Co., H. W.
Clow & Sons, James B.
Columbian Iron Works.
Ford Meter Box Co.
Hersey Mfg. Co.
McNutt Meter Box Co.
Pittsburgh Meter Co.

Meter Couplings.
Clark Co., H. W.
Ford Meter Box Co.
McNutt Meter Box Co.
Pittsburgh Meter Co.

Meter Holding Devices.
Ford Meter Box Co
McNutt Meter Box Co.

Meter Testers.
Buffalo Meter Co.
Clark Co., H. W.
Ford Meter Box Co.
Neptune Meter Co.
Pittsburgh Meter Co.

Meters—See Water and Gas Meters.

Meters for Oil and Gasoline.
Bowser & Co., S. F.

Motor Trucks.
Autocar Co., The
Couple-Gear Freight Wheel Co.
Denby Motor Truck Co.
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Indiana Truck Corp.
Studebaker.
Tiffin Wagon Co.
White Co., The

Motor Fire Apparatus—See Automobile Fire Apparatus.

Motor Truck Trailers
Denby Motor Truck Co.
Watson Wagon Co

Natural Asphalt.
Barber Asphalt Paving Co.

Nurseries.
Andorra Nurseries.
Bobbink & Atkins.
Donaldson Co.
Dreer, Henry A.
Elm City Nursery Co.
Kohankie & Son, Henry.
Meehan Co., Thomas.
Riverview Nursery & Seed Co
Smith Co., W. & T.
Storrs & Harrison Co.

Oil Engines.
Fairbanks, Morse & Co.

Oil Tanks.
Bowser & Co., S. F.
Chicago Bridge and Iron Works
Connery & Co., Inc
Pacific Tank & Pipe Co.

Packing.
Carey Co., Philip.

Paint, Preservative.
Barrett Co. The.
Dixon Crucible Co., Joseph
Sonneborn Sons, Inc.

Paint Gun (Pneumatic).
Spray Engineering Co.

Park Benches.
American Playground Device Co
Enterprise Iron Works
Stewart Iron Works Co.

Park and Lawn Sprinklers.
Buckner, W. A.
Spray Engineering Co

Paving Inspection.
Allentown Testing Laboratories.

Paving Machinery and Tools.
Barber Asphalt Paving Co.
Beach Mfg. Co.
Erie Machine Shops
Equitable Asphalt Maintenance Co.
Warren Bros. Co.

Paving Materials. (See also under Brick and Cement.)
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Bitoslag Paving Co.
Carey Co., Philip
Robertson Co., H. H.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.
Warren Bros. Co.

Paving Mixers.
Barber Asphalt Paving Co.
Warren Bros. Co.
Worthington Pump and Machinery Corporation.

Paving Mixtures.
Barber Asphalt Paving Co.
Standard Oil Co. of Indiana,
Standard Oil Co. of N. J.

Pencils, Drafting, Office.
Dixon Crucible Co., Joseph.

Pipe.
American Cast Iron Pipe Co.
Cast Iron Pipe Pub. Bureau, R. McWane, Sec.
Central Foundry Co.
Clow & Sons, James B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry Co
Lynchburg Foundry Co.
Massillon Iron & Steel Co.
Pacific Tank & Pipe Co.
U. S. Cast Iron Pipe & Foundry
Warren Fdry. & Machine Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter

Pipe Covering.
Carey & Co., Philip
Pacific Tank & Pipe Co.

Pipe Cutters.
Smith Mfg. Co., A. P.
Strickler & Bros., W. W.

Pipe Joint Compound.
Dixon Crucible Co., Joseph.
Pacific Flush Tank Co.

Pipe Jointing Materials.
Leadite Co.
United Lead Co.

Pipe Locators.
Clark Co., H. W.

Pipe (Riveted Steel.)
Pittsburgh-Des Moines Steel Co

Pipe Tools.
Walworth Mfg. Co.

Pitch.
Barrett Co., The.
Carey Co., Philip.

Pitometers.
Pitometer Co., The.

Pito Tubes.
Simplex Valve & Meter Co.

Playground Apparatus.
American La France Fire Engine
American Playground Device Co
Everwear Mfg. Co
George, Howard.
Hill-Standard Co.
Medart Mfg. Co., Fred

Plows.
Austin Western Road Mach'y Co
Beach Mfg. Co.
Burch Plow Works Co.

Plumbing Supplies.
Clow & Sons, James B.

Poles, Combination Railway Lighting.
Cutter Co., George.
Electric Railway Equipment Co
Union Metal Mfg. Co.

Police Patrols.
Denby Motor Truck Co.
The Autocar Co.
General Motors Truck Co.
White Co., The.

Continued on page 110



When the Chaymas killed the humming birds

The Great Spirit punished them. In a single night their village disappeared and in its place lay

TRINIDAD LAKE ASPHALT

This legend dates back to 1498. The nature formed tenacious binding quality of TRINIDAD is the same today. Trinidad sheet asphalt pavements have been constructed in cities all over the world and hold the *lowest maintenance costs* on record.

Write for "Why your Pavement should be Asphalt."

The Barber Asphalt Paving Company
PHILADELPHIA, PA.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 114

Police Signal Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Police Signal Systems.
Gamewell Fire Alarm Telegraph Co.

Portland Cement.
Pennsylvania Cement Co.

Producers, Gas Power Plant.
Westinghouse Electric & Mfg. Co.

Publishers.
Engineering News-Record.

Pumping Machinery.
Allis-Chalmers Mfg. Co.
Bond Co., Harold L.
Deming Co.
Fairbanks, Morse & Co.
Wood & Co., R. D.
Worthington Pump and Mach. Corp.
Yeomans Bros. Co.

Pumps for Oil and Gasolene.
Bowser & Co., S F.

Ramshorn Meter Holding Frame.
Ford Meter Box Co.

Reinforcing for Paving.
Truscon Steel Co.

Repair Lids for Service Boxes.
Clark Co., H. W.

Road and Street Machinery.
Advance-Rumley Thresher Co.
Austin-Western Road Machy. Co
Baker Mfg. Co.
Barber Asphalt Paving Co.
Beach Mfg. Co.
Buffalo-Springfield Roller Co.
Connery & Co., Inc.
Denby Motor Truck Co.
Erie Machine Shops
Four Wheel Drive Auto Co.
Good Roads Machinery Co.
Haiss Wagon Loader Co.
Jordan & Steel Mfg. Co.
Littleford Bros.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Russell Grader Mfg. Co.
Union Iron Products Co.
Warren Bros. Co.
White Co., The.
Zieg Mfg. Co., F. B.

Road Binders.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Semet-Solvay Co.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.

Road Culverts.
Burch Plow Works Co.
Clow & Sons, James B.
Good Roads Machy. Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Union Iron Products Co.
U. S. Cast Iron Pipe & Fdry. Co.
Wood & Co., R. D.
Zieg Mfg. Co., F. B.

Road Drag and Street Scrapers.
Austin-Western Road Machy. Co
The Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Rochester Can Co.
Russell Grader Mfg. Co.
Union Iron Products Co.
Zieg Mfg. Co., F. B.

Road Oil.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Dustoline for Roads Co.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.

Road Oilers.
The Autocar Co.
Austin-Western Road Machy. Co.
Denby Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Good Roads Machinery Co.
Studebaker.
White Co., The.

Road Rollers.
Austin-Western Road Machy. Co.
Barber Asphalt Paving Co.
Buffalo Springfield Roller Co.
Erie Machine Shops.
Good Roads Machinery Co.

Rock Crushers.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Worthington Pump & Mach. Corp.

Roofing Materials.
Barber Asphalt Paving Co.
Barrett Co., The.
Carey Co., Philip.

Rubber Tires.—See Tires, Rubber.

Rust Preventing Material.
Barrett Co., The.
Dixon Crucible Co., Jos.

Sand Spreaders.
Buffalo Municipal Equipment Co

Sand Testing Machines.
Kolesch & Co.

Sanitary Drinking Fountains.
Clow & Sons, James B.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Scales.
Fairbanks, Morse & Co.

Scarifiers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.

Seeds, Plants and Bulbs.
Burpee Co., W. Atlee.
Dreer, Henry A.
Storrs & Harrison Co.
Thorburn & Co., J. M.

Service Boxes.
Clark Co., H. W.
Clow & Sons, James B.

Service Box Finders.
Clark Co., H. W.

Sewage Disinfection.
Electro Bleaching Gas Co.

Sewage Pumps and Ejectors.
Otterson Auto-Eductor Co.
Pacific Flush Tank Co.
Yeomans Bros. Co.

Sewer Buckets.
Champion Potato Machinery Co.

Sewer Castings.
Clark Co., H. W.
Clow & Sons, James B.
Dee Co., Wm. E.
Enterprise Iron Works.
Pacific Flush Tank Co.

Sewer Cleaning Apparatus.
Buffalo Municipal Equipment Co.
Champion Potato Machinery Co.
Pacific Flush Tank Co.
Turbine Sewer Machine Co.

Sewer Pipe.
Dee Co., Wm. E.
Pacific Tank & Pipe Co.

Sewer Rods.
Bond Co., Harold L.
Champion Potato Machinery Co.
Turbine Sewer Machine Co.

Shades.
Stewart Hartshorn Co.

Sheer Gates.
Chapman Valve Mfg. Co.
Columbian Iron Works.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Signs—Iron and Wire.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Stewart Iron Works Co.
Union Iron Products Co.

Sleeves and Valves.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Sluice Gates and Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Rensselaer Valve Co.
Walworth Mfg. Co.

Smoke Stacks.
Pittsburgh-Des Moines Steel C

Snow Cleaning Machinery.
Baker Mfg. Co.
Good Roads Machinery Co.
Newport Culvert Co.
Russell Grader Mfg. Co.
Zieg Mfg. Co., F. B.

Soil Pipe (Cast Iron).
Abendroth Bros.
Agricola Pipe Co.
Alabama Pipe & Foundry Co
American Enameling Mfg. Co.
American Foundry & Pipe Co.
Anniston Foundry Co.
Bessemer Soil Pipe Co.
Campbell Mfg. Co.
Casey-Hedges Co., The.
Central Foundry Co.
Charlotte Pipe and Foundry C
Clow & Sons, James B.
Coosa Pipe & Foundry Co.
Crown Pipe and Foundry Co.
Gadsden Pipe Co.
Haines, Jones & Cadbury Co.
Johnson Co., J. D.
Krupp Foundry Co.
Medina Foundry Co.
Medina Iron & Brass Co.
National Foundry Co.
National Pipe & Fdry. Co.
Reading Foundry & Supply Co
Salem Brass & Iron Mfg. Co.
Sanitary Co. of America.
Somerville Iron Works, The
Standard Foundry Co.
Superior Mfg. Co.
Union Foundry Co.
Weiskittel & Son Co., A.
Wetter Mfg. Co., H.

Spraying Machinery for Trees Shrubs.
Deming Co.
Fairbanks, Morse & Co.

Spray Nozzles.
Spray Engineering Co.

Standpipes.
Chicago Bridge and Iron Wor
Connery & Co., Inc.
Fairbanks, Morse & Co.
Pacific Tank and Pipe Co.
Pittsburgh-Des Moines Steel
Wood & Co., R. D.

Steel Form for Drainage Til
Northwestern Steel & Iron W

Steel Plate Work.
Pittsburgh-Des Moines Steel

Stone Spreaders.
Austin Western Road Mach
Burch Plow Works Co.

Street Cleaners Carts.
Studebaker.

Street Cleaning Machines (
Driven).
Elgin Sales Co.

Street Flushers.
Buffalo Municipal Equipmer
Denby Motor Truck Co.
General Motors Truck Co.
Indiana Truck Corp.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Continued on page 112

Experience—the Greatest Builder



Honest manufacturing methods and carefully selected materials, alone will not make road-building machinery. It takes experience — experience in dealing with the most widely diversified problems. Experience that has proven what part or parts are subjected to the greatest strain.

The best materials and nearly a half-century of experience is the combination that has made Austin Western Machinery famous the world over as a "Super-Dependable" line.

The following Austin Western machines are giving profitable service in practically all parts of the world.



Road Graders
Rock Crushers
Road Rollers
Portable Store Bins
Stone Elevators
Stone Screens
Stone Spreaders
Elevating Graders
Blade Graders
Dump Wagons
Street Sprinklers
Street Sweepers
Motor Tandem Rollers
Motor Macadam Rollers

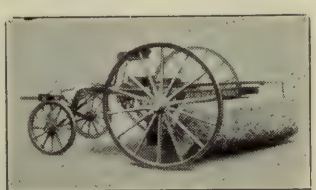
During the War the United States and Allied Governments purchased

Over 700 Austin Motor Rollers

More than ten times their combined purchases of all other rollers,

And at Higher Prices

W H Y ?



Our catalogue No. 18 which describes almost 250 sizes and styles of the above equipment, will be sent on request.

The Austin Western Road Machinery Co.

CHICAGO

Branch Offices in

NEW YORK CITY	BOSTON, MASS.	MEMPHIS, TENN.	DALLAS, TEX.
SAN FRANCISCO, CAL.	COLUMBUS, O.	ST. PAUL, MINN.	RICHMOND, VA.
JACKSON, MISS.	LOS ANGELES, CAL.	OKLAHOMA CITY, OKLA.	PORTLAND, ORE.
	ATLANTA, GA.		

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisers follows this classified list. See page 11

Street Lamps—Electric.
Cutter Co., George.
General Electric Co.
Westinghouse Electric & Mfg. Co

Street Lamp Posts.
Clow & Sons, James B.
Cutter Co., George.
Electric Railway Equipment Co.
Lyle Corrugated Culvert Co.
Stewart Iron Works Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Street and Road Graders.
Austin-Western Road Machy. Co
Beach Mfg. Co.
Good Roads Machinery Co.
Russell Grader Mfg. Co
Union Iron Products Co.
Zieg Mfg. Co., F. B.

Street and Road Signs.
Baltimore Enamel & Novelty Co
Buffalo Municipal Equipment Co
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Mathews Interlocking Sign Co.
Union Iron Products Co.

Street Sign Posts.
Cutter Co., George.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Street Sprinklers.
Austin-Western Road Machy. Co.
Autocar Co., The
Buffalo Municipal Equipment Co.
Denby Motor Truck Co.
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Sweepers.
Austin-Western Road Machy. Co.
Elgin Sales Co.
Studebaker.

Street Trash Cans.
Rochester Can Co.
Safety Sanitary Rubbish Box Co.
Steel Basket Co.

Surveyors Instruments.
Buff & Buff Co.
Kolesch & Co.

Tanglefoot for Trees.
Thum Co., O. & W.

Tanks, Storage for Oils and Gasoline, etc.
Atlantic Refining Co.
Bowser & Co., Inc., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pacific Tank & Pipe Co.
Pittsburgh-Des Moines Steel Co

Tanks and Towers.
Chicago Bridge and Iron Works.
Newport Culvert Co.
Pacific Tank & Pipe Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D
Zelnicker Supply Co., Walter A.

Tapping Machines.
Smith Mfg. Co., A. P.

Tar.
Barrett Co., The.

Tar & Asphalt Spreaders.
Four Wheel Drive Auto Co.
White Co., The.

Tar Kettles.
Barber Asphalt Paving Co.
Connery & Co., Inc.
Good Roads Machinery Co.
Littleford Bros.
Warren Bros. Co.

Tarvia.
Barrett Co., The.

Testing Laboratories.
Allentown Testing Laboratory Co.

Tires, Rubber.
Dayton Rubber Mfg. Co.
Firestone Tire & Rubber Co
Goodrich Rubber Co., B. F.
U. S. Tire Co

Traction Engines.
Buffalo Springfield Roller Co.

Traction Trains.
Buffalo Springfield Roller Co.

Tractors.
Advance-Rumley Thresher Co.
American-La France Fire Engine Co.
Denby Motor Truck Co.
Fairbanks, Morse & Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Watson Wagon Co.
White Co., The.

Traffic Posts.
Buffalo Municipal Equipment Co
Cutter Co., George.
Lebanon Machine Co
Lyle Corrugated Culvert Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Traffic Regulation Signs.
Baltimore Enamel & Novelty Co
Buffalo Municipal Equipment Co
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.

Trailers.
Buffalo Springfield Roller Co
Eagle Wagon Works
Glen Wagon & Car Corp.
Watson Wagon Co.

Trench Braces.
Bond Co., Harold L.
Clow & Sons, James B.

Trench Pumps.
Bond Co., Harold L.
Deming Co.
Fairbanks, Morse & Co.
Worthington Pump & Mach. Co.

Truscon Armour Plates.
Truscon Steel Co.

Turbines.
Allis-Chalmers Mfg. Co.
Westinghouse Electric & Mfg. Co.

Vacuum Pumps.
Deming Co.
Worthington Pump & Mach. Corp

Valves.
Chapman Valve Mfg. Co.
Clow & Sons, James B.
Coldwell-Wilcox Co.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Pratt & Cady Co., Inc.
Rensselaer Valve Co.
Simplex Valve & Meter Co.
Smith Mfg. Co., A. P.
Walworth Mfg. Co.
Wood & Co., R. D

Valves, Air.
Kennedy Valve Mfg. Co.
Simplex Valve & Meter Co.

Valves, Altitude.
Simplex Valve & Meter Co.

Valve Boxes and Housings.
Clark Co., H. W.
James B. Clow & Sons.
Columbian Iron Works
Eddy Valve Co
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Pratt & Cady Co., Inc.
Rensselaer Valve Co.
Smith Mfg. Co., A. P.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Valve Inserting Machinery.
Smith Mfg. Co., A. P.

Valve Seats.
Wood & Co., R. D.

Valve Specialties
Chapman Valve Mfg. Co.
Walworth Mfg. Co.

Wagons and Carts.
Studebaker.
Watson Wagon Co.

Wagon Loaders.
Haiss Wagon Loader Co.
Jordan & Steel Mfg. Co.

Water Supply Conservation.
National Water Main Cleaning
Pitometer Co.

Water Main Cleaning.
National Water Main Cleaning

Water Meters.
Badger Meter Mfg. Co.
Buffalo Meter Co.
General Electric Co.
Hersey Mfg. Co.
Neptune Meter Co.
Pittsburgh Meter Co.
Simplex Valve & Meter Co.
Thomson Meter Co.
Union Water Meter Co.
Worthington Pump & Mach. C

Waterproofing.
Barber Asphalt Paving Co.
Barrett Co., The
Carey Co Philip
Minwax Co., The
Sonneborn Sons Inc., L.
Truscon Steel Co.

Water Purification.
Electro Bleaching Gas Co.

Water Purification Chemicals.
See Chemicals for Water Purification.

Water Regulators.
Pacific Flush Tank Co.
Simplex Valve & Meter Co.
Union Water Meter Co.

Water Systems.
Fairbanks, Morse & Co.
Talbot Air Lift Co.

Water Towers.
Chicago Bridge and Iron Works.
Pittsburgh-Des Moines Steel C

Water Works Specialties.
Chapman Valve Mfg. Co.
Clark Co., H. W.
Clow & Sons, James B.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Leadite Co.
Minwax Co.
Northwestern Steel & Iron Work
Rensselaer Valve Co.
Simplex Valve & Meter Co.
Smith Mfg. Co., A. P.
Strickler & Bros. W. W.
Talbot Air Lift Co.
Union Water Meter Co.
United Lead Co.
Warren Fdry. & Machine Co.

Well Construction & Equipmen
Clark Co., H. W.
Talbot Air Lift Co.

Wheel Scrapers.
Austin-Western Road Machy. Co
Beach Mfg. Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.

Windmills.
Fairbanks, Morse & Co.

Wire and Cable.
General Electric Co.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Wire-Cut-Lug Brick.
Metropolitan Paving Brick Co
Southern Clay Mfg. Co.

Wood Preservatives.
Barrett Co., The.
Republic Creosoting Co.

Wood Paving.
Republic Creosoting Co.

THE preference of the caretakers of large estates, superintendents of cemeteries, golf courses and public parks is markedly in favor of "PENNSYLVANIA" *Quality* Lawn Mowers.

It is strong evidence of the staunch reliability of these long-lived, clean cutting mowers.



Quality

LAWN MOWERS

PENNSYLVANIA LAWN MOWER WORKS
INCORPORATED
JOHN BRAUN & SONS
FOUNDED 1877 PHILADELPHIA

This trade mark is on the handles of:

"Pennsylvania"
"Pennsylvania, Jr."
"Pennsylvania Golf"
"Pennsylvania Putting Greens Mower"
"Continental"
"Great American B.B."
"Shock Absorber"
"Quaker City"
"Red Cloud B. B."
"Orchid B. B."
"Daisy"
"New Belmont"
"Bellevue"
"Panama"
"Delta B. B."
"Electra"
"Pennsylvania Pony"
"Pennsylvania Horse"
"Pennsylvania Grand Horse"
"Pennsylvania Trio Horse" (86 in. cut)



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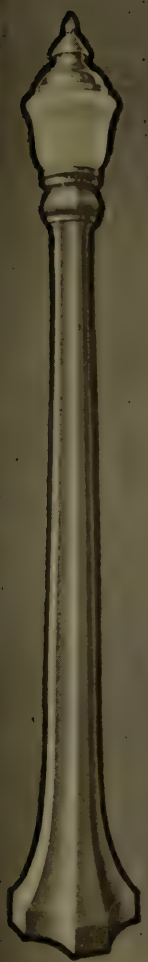
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The ARCADIAN . . . .

an ornamental lighting unit possessing all the distinctive elements of modern street illumination It presents a harmonious and pleasing combination, attractive to the public by day and by night . . .



ARTISTIC
SERVICEABLE
PERMANENT

George Cutter Company

413 NOTRE DAME ST. SOUTH BEND, IND.

The Ideal Dust Preventive

DUSTOLINE FOR ROADS

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Odorless

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Transparent

The Dustoline for Roads Co

Summit · N. J.

Phone 33

Has none of the objectional features of the black asphaltic oils or tar preparations

The American City



GOOD ROADS!

* * *

BUILD THEM NOW
AND SEE HOW
QUICKLY

GOOD TIMES

WILL ROLL
DOWN THE ROADS

U. S. DEPARTMENT OF LABOR
W. B. WILSON,
Secretary of Labor.

THIS ROAD IS PART
OF THE MAIN HIGHWAY
SYSTEM OF MASSACHUSETTS

See "Bituminous Macadam Road Construction," Page 517)



Lighting the Nation's Capitol

With the return of peace the G-E flood-lighting projectors, wh
turn night into day in the vicinity of the Capitol at Washingt
are again flooding with light that imposing building which co
mands all approaches to the nation's capital city.

Beautiful as the capitol dome appears by day it is at night t
all its dignity and grandeur are brought out by the flood of li
over its entire surface from 84 G-E flood-lighting projectors e
equipped with a 400 watt Mazda lamp. Thirty-four more p
jectors of the same type illuminate the building proper.

This flood-lighting installation is a credit to G-E illuminat
specialists—and yet there are many other examples in the co
try where, with greater difficulties to overcome, results equa
satisfactory have been achieved.

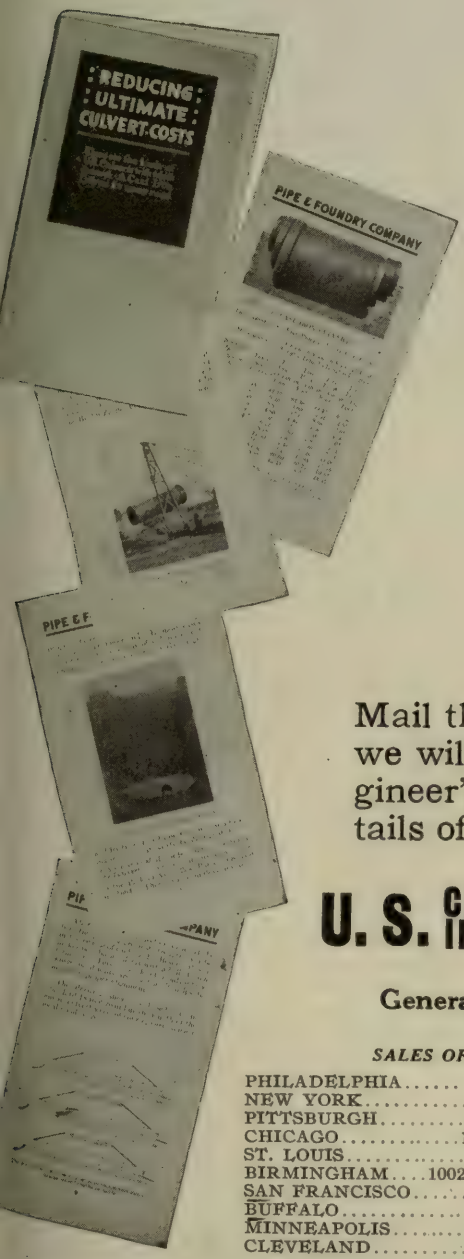
G-E Specialists are at the disposal of any municipality for adv
or assistance in decorative lighting.

General Electri

General Office **Company** Schenectady, N.

Vol. XX THE AMERICAN CITY, June, 1919
Entered as second-class matter, September 1, 1914, at the Post Office at New York, N. Y., under Act of March 3
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CULVERTS THAT LAST!



U. S. CAST IRON CULVERT PIPE HAS PROVEN ITS ABILITY TO WITHSTAND THE ATTACKS OF RUST, FROST AND SUPERIMPOSED LOADS ALMOST INDEFINITELY, AND IS USED IN ALL IMPROVEMENTS WHERE PERMANENCY IS DESIRED.

Mail the attached coupon today and we will be glad to send you our Engineer's Data Book giving full details of size, weights, etc.

U. S. CAST IRON PIPE & FOUNDRY CO.

General Office, Burlington, New Jersey

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PITTSBURGH.....Henry W. Oliver Bldg.
CHICAGO.....122 So. Michigan Blvd.
ST. LOUIS.....Security Bldg.
BIRMINGHAM....1002 American Trust Bldg.
SAN FRANCISCO.....Monadnock Bldg.
BUFFALO.....957 E. Ferry St.
MINNEAPOLIS.....Plymouth Bldg.
CLEVELAND.....1150 E. 26th St.

Please send me your Engineers' Data Book entitled "Reducing Ultimate Culvert Costs."

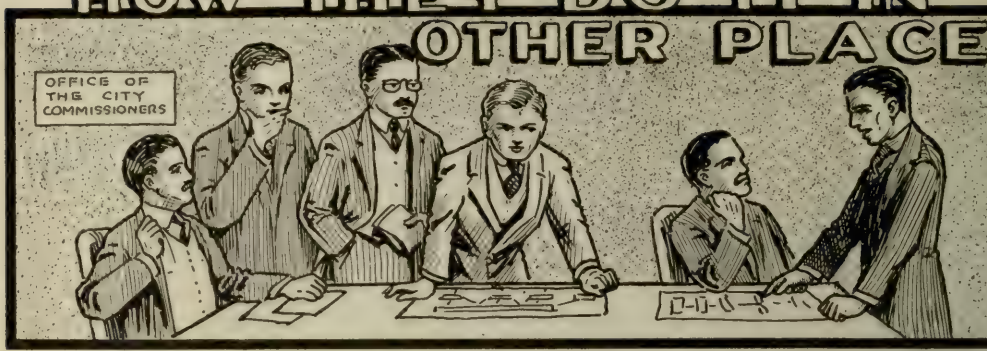
Name.....

Address.....

City.....

A.C.6.19

HOW THEY DO IT IN OTHER PLACES



Valuable Illustrated Material, Statistics, etc., Regarding Methods, Materials and Appliances for Public Improvement Work, Sent Free of Charge as Follows:

Pumping Machinery for All Purposes.

No matter what your pumping problem is, it will be worth your while to secure illustrated bulletin No. 1632 C. A. published by Allis-Chalmers Mfg. Co., Milwaukee, Wis., together with a list of the cities in which their motor-driven centrifugal pumps are in successful use.

Rubber Insulated Wires and Cables

for street lighting, fire and police alarm service are covered in the catalog of the Hazard Manufacturing Co., Wilkesbarre, Pa. Special types of cable have been designed by this company for underground installation in connection with ornamental street lighting service.

Aerial Fire Trucks

for fire department service are described in a booklet issued by the Couple-Gear Freight Wheel Co., 525 Buchanan Avenue, Grand Rapids, Mich. Anyone interested in fire protection will find it worth while to send his address for this catalog.

How Paving Brick Is Made.

Under the title "Shale to Road Bed" the Metropolitan Paving Brick Company, Canton, Ohio, has published a most interesting booklet telling how Metropolitan paving brick is made. Municipal and county officials interested in knowing just how good paving brick is manufactured will do well to secure a copy of this booklet.

Do You Believe in Signs?

The Enameled Iron Sign Company, Neptune Building, Madison Square North, New York, is now manufacturing a new line of highway and safety signs with the trade-mark "Ready Made." A complete bulletin in colors describing these signs and giving prices may be secured on request.

Horse- and Motor-Driven Street Sprinklers.

Serviceable sprinklers built for permanence, easy running and with a short turning radius, are described in literature published by the Tiffin Wagon Company, Tiffin, Ohio. These sprinklers, both horse-drawn and motor-driven, are of stout construction and their capacity varies from 300 to 750 gallons for the horse-drawn to 1,500 gallons for the motor-driven type.

What Does Hauling Cost You?

The Indiana Truck Corporation, Department 119, Marion, Ind., has compiled a valuable cost data book, which gives actual figures for your miles, your loads and your capacities. If you are interested in motor truck hauling or in motor trucks for street flushing work, you will find it worth while to write for the Indiana catalog.

Sanitary Rubbish Cans

designed to help prevent fires in your streets and to improve the health conditions of your municipality are described in the circular of the Safety Sanitary Rubbish Box Co., Columbus, Ohio.

Dirty Water Mains.

Many municipal officials are entirely unaware of inside conditions so far as their water mains are concerned. The clogging of water mains not only is an unhealthy condition, but also reduces pressure and thus cripples the fire department. An interesting pamphlet on the subject has been issued for free distribution by the National Water Main Cleaning Co., Hudson Terminal Building, New York.

Water-Works Surveys.

The Simplex Portable Pitot Tube Recorder describ Bulletin 20a published by the Simplex Valve & Company, 112 North Broad Street, Philadelphia, one of the most valuable instruments in use to-d water departments for tracing water leaks. This b describes the construction of the instrument and an account of surveys which have been made in a nu of cities. It may be had upon request.

Is Your Water-Works System All Metere

Some cities have no meters, others are only metered; but real efficiency can be secured only by versal metering. If interested in having your wate tem put on a more efficient basis, send for printed m of the Badger Meter Mfg. Co., 841-847 30th Street, waukee, Wis.

Problems of Calculation.

Does your office work call for statistics, reports, eng ing formulae or any close figuring work of this na If so, the burden will be quickly lifted if you ins Monroe calculating machine as illustrated and desc in the catalog of the Monroe Calculating Machine Woolworth Building, New York, sent free on requ anyone mentioning THE AMERICAN CITY.

Culverts—Half-Round and Round.

Have you been using round culverts only? Did you investigate the advantages of the half-round culver special kinds of culvert service? The catalog o Newport Culvert Co., 524 West 10th Street, Newport, describes both the round and half-round types an plains the uses for which they are best fitted.

Oil Engines, Water Systems, Air Compres Etc.

are described in the illustrated printed matter of banks, Morse & Co., Chicago, Ill. A catalog is also nished on request relative to electric meters and g ators, air compressors and pumping engines.

Road Oilers and Heating Kettles.

The effect of oil on a road or street is similar to th paint on a house, as it preserves the surface and ke from deterioration. If you are interested in road or road repairs, you will find it worth while to writ the catalog of the Good Roads Machinery Co., Ke Square, Pa.

Motor Trucks for Paving, Road Building Street Flushing

in capacities of from one to six tons are described i catalog of the Denby Motor Truck Co., Detroit, These trucks are desirable for municipal and county vice, on account of the high percentage of power act delivered at the rear wheels.

Sewage Handling.

Yeomans Brothers Co., 231 Institute Place, Chicago, are distributing a bulletin relative to the Shone syste automatic sewage pumps which are in satisfactory se by a number of municipalities.

Trees, Vines, Plants and Bulbs.

A large and choice selection of young nursery-grow namental trees, fruit trees, vines, perennial plants bulbs is included in the 1919 trade price-list of th lantic Nursery Co., Inc., Berlin, Md.

In writing for any of this printed matter please mention THE AMERICAN CITY.

(*Continued on page 6*)



Short Wheelbase—Easier to Operate

The 97-inch wheelbase Autocar permits a turning radius of 38 feet. A complete circle can be made in the average city street without backing.

Autocar practicability, durability and simplicity of construction combine to create an efficient unit for contractors or municipalities.

Write for catalog which lists more than 7000 Autocar users.

Chassis $2050

THE AUTOCAR COMPANY, *Ardmore, Pa.* Established 1897

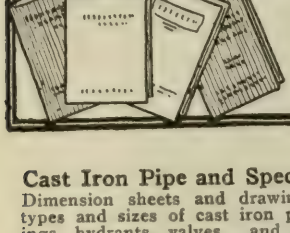
The Autocar Sales and Service Company

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Brooklyn	Providence	Allentown	St. Louis	Baltimore	San Diego
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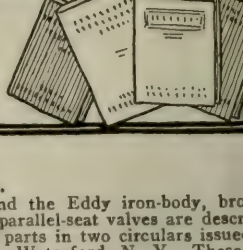
Represented by these Factory Branches, with dealers in other cities

Autocar

HOW THEY DO IT IN OTHER PLACE



Valuable illustrated material as mentioned below, will be sent free of charge if you mention THE AMERICAN CITY



Cast Iron Pipe and Special Castings.

Dimension sheets and drawings of a great variety of types and sizes of cast iron pipe, standard special castings, hydrants, valves, and other materials for waterworks and gas works are given in a catalog issued by R. D. Wood & Co., Philadelphia, U. S. A.

Cleanliness in Public Drinking Fountains.

The Puro Sanitary Drinking Fountain Company, Haydenville, Mass., has issued a catalog for 1919 giving the history of drinking fountains and describing the development of its sanitary Puro fountains, as well as combinations in coolers and pedestal fountains, which the company will be glad to send to any readers of THE AMERICAN CITY on request.

Why Chlorinate Water?

In a booklet entitled "Why," the Wallace & Tiernan Company, 349 Broadway, New York City, gives a complete outline of the reasons for chlorinating water and sewage. This interesting folder will be sent on request.

Fire Tragedies and Their Remedy

is the title of an interesting booklet issued by the General Fire Extinguisher Company, 283 West Exchange Street, Providence, R. I. Every individual or organization interested in fire prevention will find this booklet of important interest.

The Right Way to Clean Catch-Basins.

The Otterson Auto-Eductor Company, 817 Fairbanks Building, Springfield, Ohio, has just published a new folder fully describing its catch-basin cleaning equipment and containing cost data and salutary letters from government and city officials. Street cleaning and sewer department officials will find much of value and interest in this catalog.

Culvert Pipe and Road Plows.

Interesting literature has just been published by the Burch Plow Works, Crestline, Ohio, on their expansion cast iron culvert pipe and the new Burch wood beam steel road plow, which may be secured by writing to Department C.

Liquid Asphalt for Road Surfacing.

An economic method of road surfacing is fully described in a pamphlet entitled "Barber Brand Liquid Asphalt for Road Surfacing," which has recently been published by the Barber Asphalt Paving Company, Philadelphia, Pa., and which may be secured by highway officials upon application. This valuable publication contains a great deal of information on costs and methods of applying liquid asphalt.

Artistic Park Vases.

The Stewart Iron Works Company, Inc., 527 Stewart Block, Cincinnati, Ohio, has just published its catalog No. U describing iron reservoir vases for uses in parks and cemeteries. The valuable feature of these vases is their automatic watering device, which gives just the right quantity of water at all times. This catalog also describes its complete line of steel park settees and fences.

Trucks and Truck Bodies for Public Work.

A very complete catalog has just been issued by the Four Wheel Drive Auto Company, Dept. 106, Clintonville, Wis., giving a complete description of its trucks, which are claimed have the most economical and efficient application of power. This catalog also gives complete drawings of various types of bodies. It will be sent to any municipal or highway official interested on request.

A Free Motor Truck Highway Publication.

The Acme Motor Truck Company, Cadillac, Mich., has just begun the publication of a magazine entitled "Acme Angles," which the company will send regularly to those who are interested in motor-truck operation and maintenance. There is no subscription charge, and all that is necessary is to send your name and address.

Hydrants and Valves.

The Eddy fire hydrant and the Eddy iron-body, bro mounted, double-gate and parallel-seat valves are descr with detailed drawings of parts in two circulars issue the Eddy Valve Company, Waterford, N. Y. These culars will be sent free on request to any official terested in dependable valves or hydrants.

Valves, Steam Traps and Cocks.

The catalog of Pratt & Cady Company, Inc., Hart Conn., describes in detail all types of valves from smallest size gate to large, heavy, iron body valves water-works purpose. Bronze and iron asbestos-pa cocks for all types of service are also described.

Meter Settings and Accessories.

A catalog recently published by the Ford Meter Box pany, Wabash, Ind., describes in detail the Ford n box settings and gives a series of arguments as to wh curb is the place for the water meter. Other meter a sories are described in this catalog, which may be obta on application.

Concrete Mixers and Road Machines.

In catalog No. 31 recently issued by the Waterloo struction Machinery Company, 311 Vinton Street, W loo, Iowa, they describe their full line of Wonder crete Mixers with labor-saving devices as well as additional line of construction machinery, inclu Waterloo backfillers, pumps, hoist and air compres The catalog, which may be secured on request, includ complete statement of the new method of rating con mixers.

Specifications for Tar and Asphalt Kettles

An interesting set of instructions, specifications and scriptive matter has been published by Connery & pany, Inc., 4000 North 2d Street, Philadelphia, Pa., c ing tar and asphalt heaters of different types and The specifications are in detail and will be of valu road engineers.

Catalog of Road Machinery.

A complete catalog, "Everything for Roads," is publi by the Beach Manufacturing Company, Charlotte, M and contains interesting descriptions of its culvert terial, all-steel road drags, tamper roller, road p rooters, scrapers and back fillers and the "Ever-Cl gravel screen.

A Catalog of Quality Playground Appara

An attractively illustrated detailed catalog of playgr apparatus is ready for distribution by the Ever Manufacturing Company, Springfield, Ohio. This 51 catalog contains complete description, detailed pict general pictures and prices of all types of playgr apparatus, aimed to amuse children of all ages in and increase their health and strength.

A Complete Screener and Loader.

A single compact machine which will screen and gravel, furnish its own power and requires no extra or teams to scrape the gravel into the machine is scribed in literature of the Jordan & Steele Manufactu Company, Charlotte, Mich., which can be secure those interested in paving and road-building work.

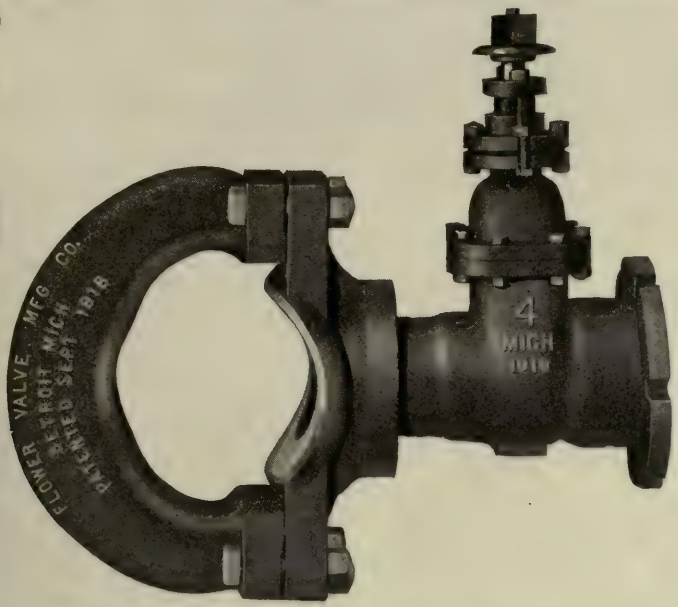
Handy Tables for Street Lighting.

The George Cutter Company, South Bend, Ind., ha cently published a very complete booklet containing h wiring tables and illumination data for the use of interested in the more efficient use of electric light. first edition published in 1896 brought forth conside comment. A portion of it has been reprinted wi valuable portion from the Cutter catalog, and shou in the hands of all city officials interested in lighting.

Tandem Rollers for Paving and Road W

Thru experience extending from 1877 to date the Machine Shops, Erie, Pa., are to-day manufacturing ard rollers built for service. The latest catalog desc in detail the construction and fine points of their line





The New Flower Sleeve Saves Time, Money and Labor

The new Flower improved sleeve means quicker installations, reduced costs, and less labor required.

A shallower trench can be used, no lead is required on the job, caulking is slight, and the labor required is but a fraction of that necessary with the old style sleeve.

NO LEAD NEEDED ON THE JOB

The hardest part of the job—pouring the lead and caulking the leaking joint—is done away with entirely, as the lead is dove-tailed firmly in each sleeve and fitted to the contour of the pipe.

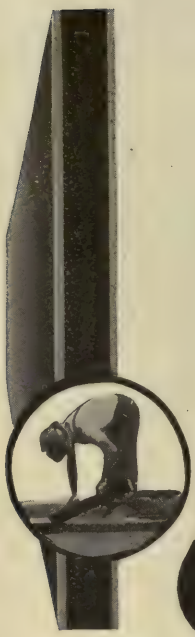
The sleeve need only be bolted around the pipe and the tap made in the usual way.

OTHER FLOWER PRODUCTS

This is but one of the many products of the Flower organization. In the "Flower" and "Michigan" lines, there are found every kind of supply needed in municipal hydraulic work—valves, hydrants, gates, indicator posts, operating stands, valve boxes and similar parts.

We will gladly send catalog of the full line and special folder giving details of the improved sleeve. Send for your copy today.

Flower Valve Manufacturing Company
103 PARKINSON STREET **DETROIT, MICHIGAN**



CAREY

Elastite

NAME REG. U.S. Patent Office

EXPANSION JOINT

Build safety into walks



will fully — protect your walks from this

WHEN cement sidewalks are properly laid, the only thing that can cause an unsightly and destructive crack like this is the lack of expansion space.

Avoid risks by building Elastite Joints into your walks.

These joints are made of tempered asphalt compound held between two layers of asphalt saturated felt.

They last as long as sidewalk or pavement because summer heat does not dry them out or winter cold cause them to become brittle. The asphalt compound and the saturation in the felt insure the permanent elasticity, hence the name Elastite.

Elastite Joint come in strips of any length, width and thickness you desire.

Write for sample and descriptive literature.

THE PHILIP CAREY COMPANY

8 Wayne Ave., Lockland, CINCINNATI, OHIO

EVERWEAR



BOYS WILL BE BOYS
GIRLS WILL BE GIRLS

It makes little difference whether they are boys or girls—all children have that desire to play and exercise. So why not let them carry on their joyful and innocent games in a safe and systematic manner? And in no better way can this be done than through the means of playgrounds.

Playgrounds make healthier and happier children and consequently healthier and happier men and women.

Let us have data on your ground spaces and we will gladly send you plans and prices without you incurring any obligation.

THE EVERWEAR MANUFACTURING CO.
Springfield, Ohio

EVERWEAR
STANDS WEAR AND TEAR

EQUIPMENT



WHY YOU SHOULD USE EVERWEAR APPARATUS!

The *children are safe* on Everwear apparatus, because every detail of construction is planned to safeguard them. And *you are safe* in purchasing Everwear because it is built of the highest grade materials and by expert workmen. For durability it has no peer. All equipment is carefully inspected and tested and shipped *direct* from *maker* to *user*. Equipment at a minimum cost embodying maximum efficiency.

Write for free catalog describing and picturing our complete line of the latest and approved playground equipment. And don't forget—*More Playgrounds make fewer Plaguegrounds.*

THE EVERWEAR MANUFACTURING CO.
Springfield, Ohio

EVERWEAR
STANDS WEAR AND TEAR

SOW GOOD METERS

THRU OUT YOUR CITY



NEPTUNE METER COMPANY
50 EAST 42nd STREET, NEW YORK
CHICAGO · BOSTON · SANFRANCISCO
ATLANTA · LOS ANGELES · SEATTLE
PORTLAND · CINCINNATI
Makers *of the* Trident Water Meter

REAP A HARVEST OF SATISFACTION

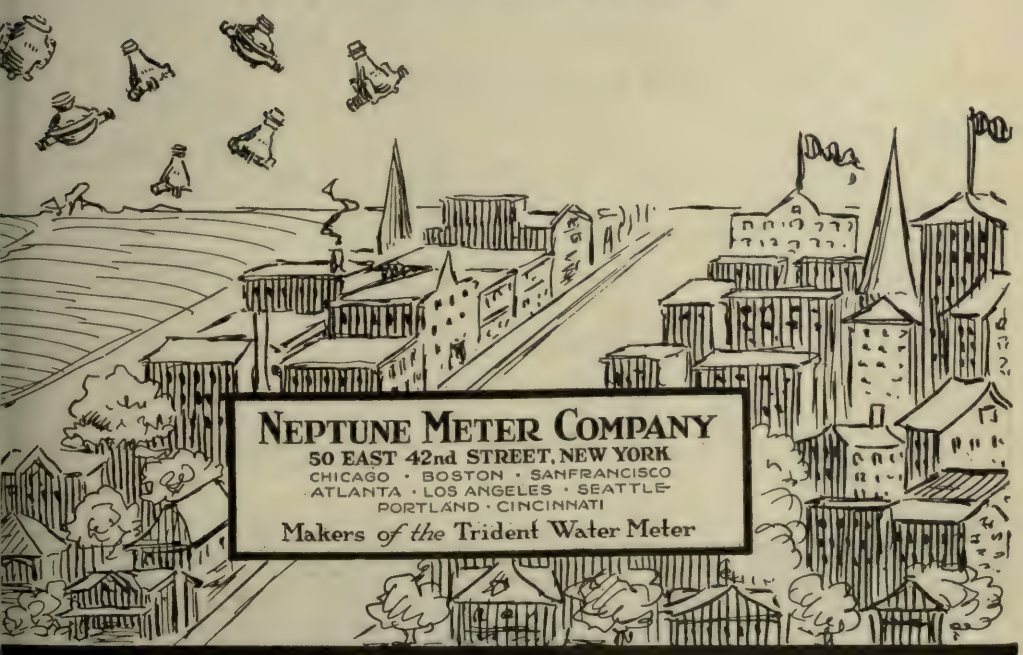
WHAT PERCENT OF YOUR WATER SERVICES ARE METERED?

If you have already metered part of your services you are beginning to realize the beneficial results of water meters. If, however, your city has not yet begun to meter water services, you are losing your share of the harvest of economy in water works operation.

The elimination of water waste, the detection of illegal use of water and the inevitable reduction in the quantity of water which must be pumped are all strong factors in the great harvest of satisfaction which has been reaped by the many cities that have thoroly metered their water services.

We are prepared to provide you with meters for all kinds of services; Trident Disc Meters for residence services, the Trident Crest Meter of the current type for the larger services and the Trident Compound Meter where the demand varies greatly. Let us help you in your endeavor to reduce the water waste in your city. Send for our interesting booklets dealing with the problems of water waste and their solution, which offer practical suggestions as to how your water works plant can be operated with greater economy.

SEND FOR THE PAMPHLETS TODAY





PIPE ECONOMY

FOR EVERY JOB requiring pipe there is one kind of pipe more suitable than all others.

What kind of pipe does the job demand?

On the proper answer to this question depends real economy. Low initial cost, light weight, excessive tensile strength; personal preference, etc., are all beside the question—What kind of pipe does the *job* demand?

If above ground, on the ground, under ground, or under water; if for conveying water, gas, steam or acids, *cast-iron pipe* is the pipe the job *demands*—its use is real economy.

There is but one pipe which once laid is as good for service hundreds of years afterward as the day it was installed.

There is but one pipe which constitutes an asset, a real asset, in the valuation of any water or gas plant.

There is but one pipe which will not rot, rust or wear out.

There is but one pipe which does not deteriorate and which Mother Earth will embrace and not destroy—and that pipe is

CAST IRON PIPE

Some notable examples of its long and constant service:

Versailles	255 years
Weilburg	215 "
Claremont-Ferraud	170 "
Glasgow and London	125 "
New York	85 "



American cities are too young to have learned from their own experience the life of cast-iron pipe.

The Cast Iron Pipe Publicity Bureau
1 Broadway **New York**



CAST IRON PIPE

Some cities in this and foreign countries in which conduits other than cast iron have proved defective in from two to twelve years and been **replaced** with

CAST IRON PIPE

Atlantic City, N. J.	**Madrid, Spain**
Bombay, India	**Metz, Germany**
Duluth, Minn.	**Nancy, France**
Hammond, Ind.	**Rome, Italy**
Havana, Cuba	**Troy, New York**
Ladysmith, So. Africa	**Warwick, Can.**

There is no record in this or other countries of any substitute for Cast Iron Pipe having given more than twenty-five years continuous and satisfactory service—only one-tenth the present record of Cast Iron Pipe.

Why Experiment?



The Cast Iron Pipe Publicity Bureau
1 Broadway **New York**

CAST IRON PIPE



PUMPS—COMPRESSORS—CONDENSERS—METER

WORTHINGTON

Worthington Works, Harrison, N.J.
Blake & Knowles Works, East Cambridge, Mass.
Deane Works, Holyoke, Mass.
Hazleton Works, Hazleton, Pa.

Another Leaf from the Worthington war book

FOR the most part, Worthington's vital share in forging the American war machine was carried on in "third-line trenches"—in the countless factories and shipyards, or at mines or farms three thousand miles from the front.

But in a few instances Worthington went forward with our troops. Worthington Compressors, made by our Laidlaw Works, for example, were employed in filling cylinders with compressed gas for inflating balloons. Other Worthington Compressors found varied use on our ships of war, from clearing the big guns of gas to emptying flooded compartments or operating machine tools. It was our Laidlaw Works, indeed, which supplied over a hundred compressors for Uncle Sam's new destroyers.

And so throughout the whole big Worthington organization. All the facilities of our eight factories were employed wherever they could speed up war work, and the long list of products delivered—to our government, to military forces, and to industry—constitutes for us both a sweeping endorsement of Worthington quality and a proud roll of honor.

WORTHINGTON PUMP AND MACHINERY CORPORATION
***Executive Offices:* 115 Broadway, New York City**
Branch Offices in 24 Large Cities



OIL & GAS ENGINES—MINING MACHINERY

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PRODUCTS FOR PUBLIC WORKS:

Artesian Well Pumps
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Fire Pumps
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Water Meters
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Special Bulletins on Request

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To FIRE CHIEFS &

CLOGGED MAINS CAUSE POOR STREAMS



Has your fire department ever been faced with a terrific conflagration, only to find that in connecting up with the water mains that the poor water pressure made a successful fight almost impossible?

Do you appreciate what an important bearing the inside of your water mains has as regards the water pressure which you find at the end of your nozzles?

Would it not be a source of great satisfaction to you to feel that the water mains of your city were entirely free on the inside from clogging deposits of filth and sediment which render 100% service impossible? Our free booklet "The Cleaning of the Water Main" will show you what other cities are doing in the way of securing the unimpeded progress of water thru their mains. We will gladly send this booklet to you on receipt of your request.

National Water Main Cleaning Co.

Hudson Terminal Building

NEW YORK CITY

WATER WORKS SUPERINTENDENTS

DIRTY MAINS CAUSE TURBID WATER



The rising costs of everything used in connection with water supply systems makes it necessary for every water works superintendent to adopt every reasonable means to curtail waste and prevent unnecessary expenditures.

Clean water mains mean savings to a city of thousands of dollars annually. In addition to the money-saving advantage, clean water mains mean a healthier city, for it does not take much of a stretch of the imagination to picture the undesirability of having your drinking water pass thru mains clogged with filth.

No one appreciates better than the water works superintendent how much less pumping pressure it takes to force water thru clean mains than it does thru those which are partly stopped up with sediment or incrustations.

The National method of cleaning mains is the simplest, quickest and cheapest. The mains are cleaned and scoured and restored to their normal capacity. Scores of cities have tried out the National method with the greatest satisfaction to all concerned. Our free book "The Cleaning of the Water Main" shows you how to cut down your coal bill and at the same time give your fire department better pressure and your health department cleaner water at the mouth of the faucet.

National Water Main Cleaning Co.

Hudson Terminal Building

NEW YORK CITY

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— the original and only FAIRBANKS SCALES — are

manufactured by

E. & T. Fairbanks & Co.

St. Johnsbury, Vermont

Owned, controlled and operated by Fairbanks, Morse & Co.

THE accuracy and long life of Fairbanks Scales come from the quality built into every part. Over eighty-seven years of constant progress in design and manufacture have served to bring about and maintain their ***leadership.***

"If it's weighed on a FAIRBANKS — there's no argument"

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FAIRBANKS, MORSE & CO.

are also MANUFACTURERS of these well known quality products

FARM ENGINES
—1½ to 15 H. P.—Over 75,000 sold annually. All sizes run on kerosene, distillate, coal oil, tops and gasoline.

OIL ENGINES
—10 to 200 H.P.—Set a new standard of low power cost, using low grade fuel oils.

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—30 to 300 H. P.—Operate on the lowest grades of fuel oil obtainable in any port.

MOTOR CARS
—Hand, Push and Velocipede Cars and Standpipes.

ELECTRIC MOTORS AND GENERATORS
A. C. and D. C. Mechanically and Electrically rugged. The original ball bearing motors.

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Well known for 50 years—many now on farm and ranch have been used constantly for 38 years.

FEED GRINDER
For all grains. Thousands in every day use.

FAIRBANKS-MORSE
STEAM, POWER AND CENTRIFUGAL PUMPS
All types and sizes. Long dependable service under varied conditions prove their built-in quality.

LIGHT PLANT
Gives light—and power as well—for the farm. Runs on Kerosene.

Mor-Lite LIGHT PLANT
A direct connected outfit that is practically automatic.

FAIRBANKS-MORSE WATER SYSTEM
For any need—from farm or home to factory, municipal or railroad service.

"Typhoon" Power Pumps
Woodsawing Outfits
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Hoists
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Twelve Trade Marks that guide keen quality buyers

These stand for plus dependability

All sold and distributed by

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BADGER

TO PREVENT WASTE



WILFUL AND CARELESS WASTE OF WATER

is one of the most difficult problems which has to be encountered by the water works superintendent.

To check waste, water must be measured at every service and measured accurately.

BADGER DISC METERS

are as near perfect in every detail as can be obtained with expert workmanship and the highest quality of material. The Disc meters from 5/8 to 4 inch sizes can handle all house services, while the

TURBINE COMPOUND METER

ranges from two to six inches in size and is built for the larger services. For industrial plants where the greatest accuracy in water measurement is necessary it is invaluable.

OUR NEW CATALOG

describes the full line of Badger Meters in detail and is now ready for distribution. This catalog and prices sent on request.

BADGER METER MFG. COMPAN

841-847 30TH S

Milwaukee
Wisconsin

METERS TO SAVE COAL

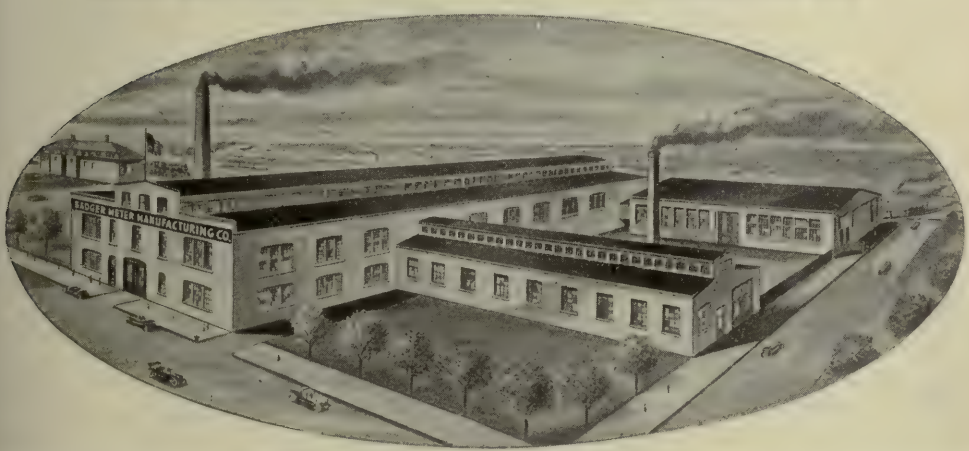
WASTE OF WATER MEANS EXCESSIVE PUMPING

Every water works superintendent knows very well what this means in consuming the coal pile. If you want to eliminate the necessity of constantly increasing your power plant, of continually giving larger coal orders, see to it at once that your city joins the class of those

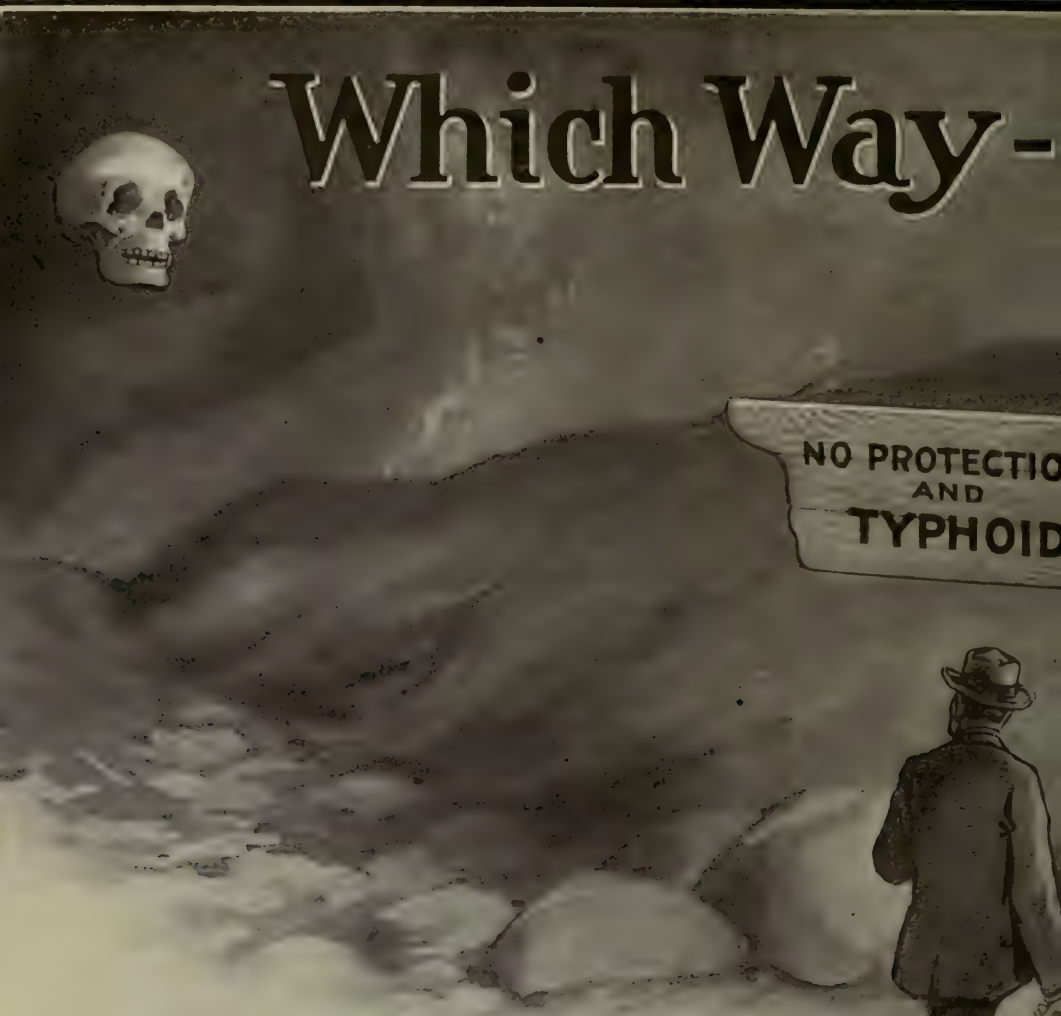
100% METERED

The constantly increasing volume of orders for all types of Badger Meters is shown in no small way by the continued necessary enlarging of our factory. We have grown out of our old factory and are now occupying the greatly enlarged quarters shown below and are ready to continue our service to water departments thruout the country by furnishing them with the best and most economical meter on the market.

BADGER METER MANUFACTURING COMPANY
841-847 30th STREET **MILWAUKEE, WIS.**



Which Way -



The Responsibility IS YOURS!

ONE WAY lies the ever potential danger of TYPHOID FEVER and similar water-borne diseases, through a polluted Water Supply.

THE *OTHER* WAY—*the right way*, means complete protection by efficient sterilization to you, your family, your friends, your entire community.

W&C INC

WALLACE &

349 BROADWAY

Mr. Waterworks Man?



There is but one way

to be sure that any water is safe—STERILIZE IT—by Liquid Chlorine and

"W & T" Equipment

THE STANDARD CHLORINATOR

The water supplies of New York, London, Paris, and hundreds of other cities and towns, large and small, throughout the world are equipped with this apparatus, treating upwards of Three Billions of gallons daily.

The Cost? But 17 cents to 50 cents per million gallons.

TIERNAN CO., Inc.

NEW YORK CITY

Chemicals for Water Purification

We manufacture the highest grades of

Sulphate of Alumina

also

Chloride of Lime

and

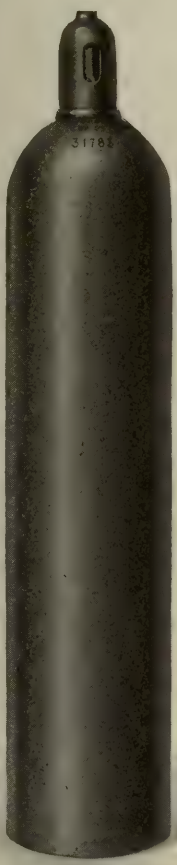
Liquid Chlorine

PENNSYLVANIA SALT MFG. CO.

WIDENER BLDG. :: :: PHILADELPHIA, PA.

Why not capitalize on the experience of others?

Read This Testimony!



*"We wish to express our satisfaction with the quality of gas which we have had this past year, and also for the service rendered. Under great shipping difficulties we have been able to get our supply regularly and with one exception always had a small reserve. This means a great deal to us in water sterilization."

***Paragraph from letter recently received at our New York Office.**

The extreme care taken in every department of manufacture, together with the improved method under which E. G. B. Liquid Chlorine is purified and liquefied, assures a quality of unvarying reliability—no foreign impurities to gum up your apparatus and put it out of commission.

Our Plant at Niagara Falls, N. Y., covers more than 10 acres and has been pronounced by Government Officials the most completely equipped and modern plant of its kind in the world.

It has a capacity equal to any requirements.

Look for the RED Cylinder

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Pioneers and Leading Manufacturers of Liquid Chlorine

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Main Office:
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MATHIESON ALKALI WORKS, Inc.

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EAGLE-THISTLE BRAND

Castner Electrolytic Process

CHLORIDE OF LIME

In 225, 300, 450 and 750-lb. drums. Strongest, quickest-settling, most uniform and reliable.

LIQUID CHLORINE

Pure, anhydrous, for use with any control apparatus, specially packed for Water Works' use in improved and convenient cylinders, 105 and 150 lbs. net.

We can make prompt and regular shipments and shall be pleased to quote for spot and contract deliveries.

ARNOLD, HOFFMAN & CO., Inc.

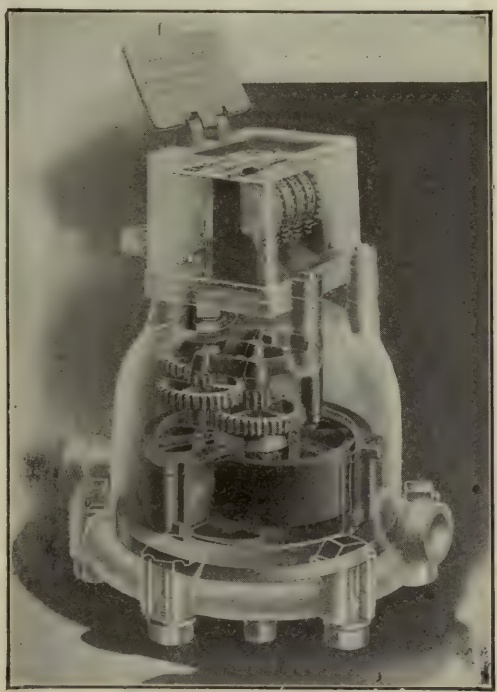
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WHY

THE EMPIRE WATER METER IS SUPREME



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The Maintained Accuracy Covering 30 years' Actual Service of Every Size Has Never Been Equaled.

Our Pamphlets Tell the Story

NATIONAL METER COMPANY

299 BROADWAY, NEW YORK

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WRITE FOR CATALOG AND PRICES

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HERSEY DETECTOR METER

The Hersey Detector Meter has been accepted for thirteen years in 3, 4, 6, 8, 10 and 12 sizes without any restrictions or conditions of any kind by every Insurance Company, Stock and Mutual, doing business in the United States, and by the Water Departments and Water Companies in more than 600 Cities and Towns for use on over 4,000 Fire Services protecting over $2,000,000,000 worth of Insured Property.

HERSEY MANUFACTURING COMPANY

BOSTON NEW YORK CHICAGO COLUMBUS, O

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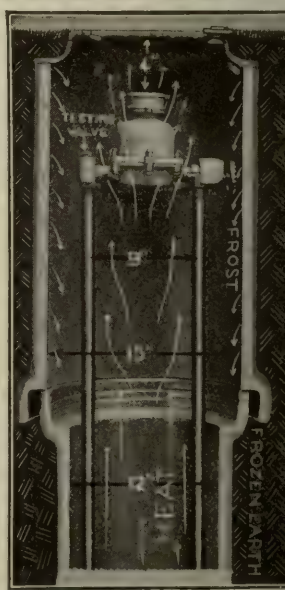
We Do Not Promise— WE GUARANTEE

this non-freeze box.

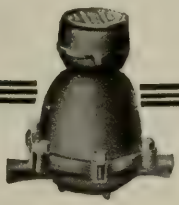
We offer you maximum efficiency and satisfaction at minimum expense.

Our prices were not made to compete with anyone in our line, but are the result of careful sales organization.

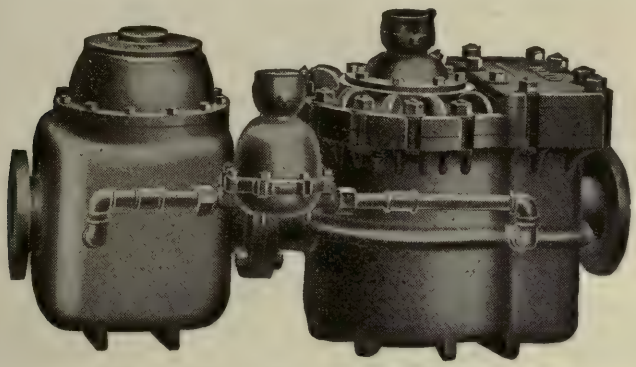
The McNutt Cover is the ***original*** hinged-lid easy-to-read cover. A written guarantee against freezing accompanies every McNutt Meter Setting. Write us for prices.



McNUTT METER BOX CO.
28 McNutt Bldg. Brazil, Indiana



A DEPENDABLE WATER METER IS A NECESSITY



The Nilo Compound Meter

Equitable and economical distribution of water requires the use of water meters that are built both for accuracy and durability.

Union Water Meters are designed to meet the most exacting conditions required in proper registration of water.

Special attention given to all bearing surfaces and the large capacity of the measuring chamber assuring accuracy and long life.

UNION WATER METER COMPANY
WORCESTER INCORPORATED 1868 **MASSACHUSETTS**



SAVE COAL

SAVE SAVE

ALL GOVERNMENT BUILDINGS ARE METERED.

YOUR CITY CAN HELP SAVE

Saving Water Means Saving Coal, Machinery and Labor. **This is Vital During the Period of Reconstruction.**

The installation of Lambert Water Meters will save the water which conserves the coal and labor.



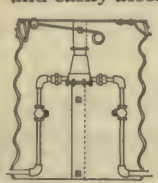
Why not specify Lamberts and get the best?

Thomson Meter Company
100-110 Bridge Street
BROOKLYN, N. Y.

DURO Meter Box



A better type of meter box—light, unbreakable, made of rust-resisting DURO Copper Iron. Heavily galvanized, no parts to lose, self locking cover easily removed. Shipped knocked down, low freight rates, quickly and easily assembled. Made frost proof, and in any diameter and weight. Write us your requirements and let us quote prices.



The Duro Meter Box is patented and manufactured only by

THE C. C. FOUTS COMPANY
650 Woodlawn Middletown, Ohio

Ten Large Cities **10** in the United States

New York, Chicago, Philadelphia, Pittsburgh, Baltimore, Detroit, Atlanta, Jersey City, Duluth, New Orleans

and many others are using

Hooker Liquid Chlorine

Especially prepared for Water Purification and Sewage Disposal purposes

Guaranteed Chemically Pure and Anhydrous
Hooker Cylinders are Standard Size Equipped with the most modern Chlorine Valve
Prices furnished for Prompt and Future Deliveries

Hooker Electrochemical Co.
40 Wall Street, New York
Works: Echota, Niagara Falls, New York

"ARCTIC"

The All-Year-Round Water Meters



Arctic Water Meter

They Have Frost Bottoms

During winter, should the water in an ARCTIC Water Meter freeze, the Frost-Bottom Plate breaks before the pressure inside the meter is sufficient to injure the mechanism—The only damage resulting is the breaking of this inexpensive bottom plate, which is easily and quickly replaced at a nominal cost.

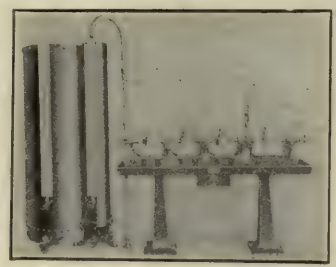
Send for Circular No. 59

Pittsburgh Meter Co., East Pittsburgh, Pa.

New York, 149 Broadway
Chicago, 5 South Wabash Ave.
Kansas City, 6 West 10th St.
Seattle, 802 Madison Ave.
Columbia, S. C., 1433 Main St.
Los Angeles, Union Oil Bldg.

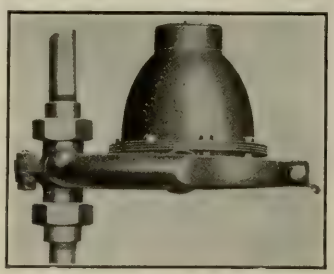
Designers and Builders of Meters for Measuring Oil, Gas, Gasoline, Water and other Liquids

The Best in Meter Specialties



FORD WATER-METER TESTERS

This machine has been especially designed to supply the demand for a thoroly practical and comparatively inexpensive device that will test water meters accurately and rapidly. The Ford Testing Machine No. 4 is so arranged that one 1-inch or three ⅝-or ¾-inch meters may be tested simultaneously. The special features of this machine are, ease of adjustment for different sized meters, and the quickness and ease of placing meters in position.

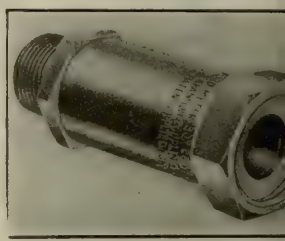


"RAMS-HORN" METER HOLDING FRAMES

This meter holding frame is easy to install, cheaper than ordinary pipe fittings, takes any standard meter without adjustment and offers practically no resistance to the flow of water.

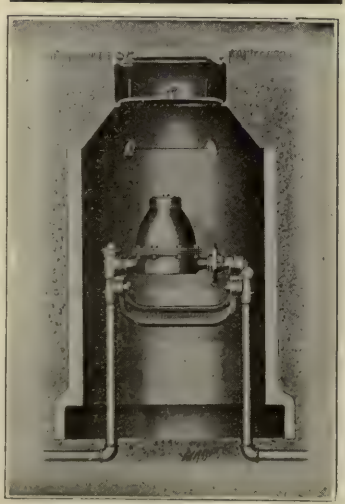
No nipples are required thus making it a time-saver in setting meters. Each "Rams-Horn" is tested to 200 pounds pressure before shipment, thus insuring a perfect frame to all purchasers. Provision has been made so that the meter may be easily sealed in the frame to prevent tampering by consumers.

You cannot go wrong in using the tried and standard line of Ford Meter Specialties.



FORD ADJUSTABLE COUPLINGS

These couplings are designed for the quick installation of water meters in straight line pipes and overcome the great difficulties which are ordinarily encountered in the removal or exchanging of meters in service. In changing from one sized meter to another there has always been difficulty in getting the proper sized fittings, but the Ford Flexible Coupling makes these operations simple and easy. They may be used to equal advantage in general pipe work, steam, water, gas or air.



FORD METER BOXES

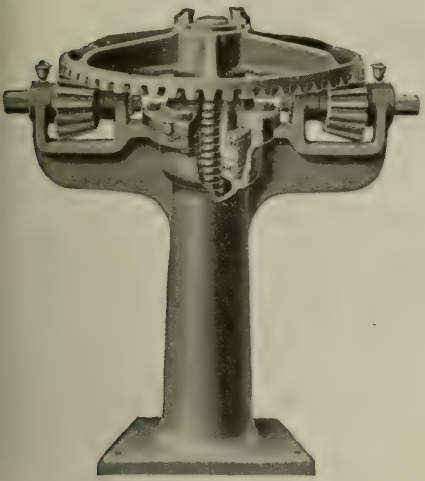
Located at the curb and equipped with the Wabash Double Lid Cover so there is no danger from freezing. The locking device protects the cover and meter from tampering and when unlocked raises the cover from its seat. Neither frost nor dirt will cause it to stick. The inner lid provides a dead insulating air space making the box practically frost-proof.

Water departments completely equipped with Ford Meter Specialties find many of their old troubles completely overcome. Only the best materials are used combined with first class workmanship.

Write today for our bulletins and pamphlets describing Ford specialties so that you may know more about their value.

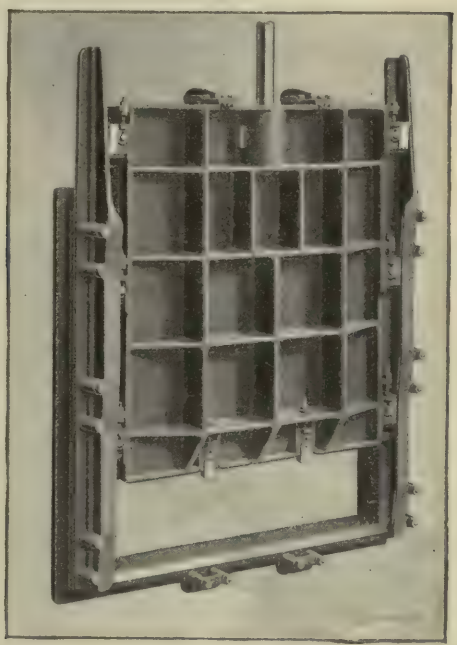
Ford Meter Box Co.

WABASH **INDIANA**



No. 6 Double Pinion Roller Bearing Pedestal

Standard Square Sluice Gate with Back Pressure Wedges



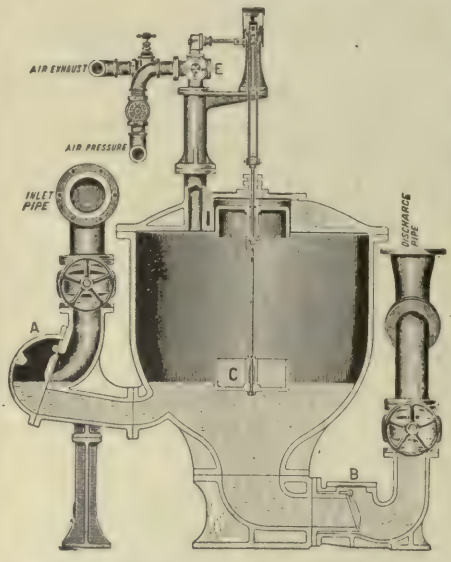
MANUFACTURERS OF SLUICE, HEAD AND PENSTOCK GATES, FLAP AND SHEAR VALVES

COLDWELL-WILCOX CO.

Water Street **Newburgh, N. Y.**

SHONE PNEUMATIC SEWAGE EJECTO

Endorsed by City Engineers from a parts of the United States



Reliable–Simple–Durab

The Shone Ejector ha an unequaled record o performance covering a period of thirty-five years Fifty-two Ejectors were used the Chicago World's Fair Groun 1893. In 1891 the City of Chica installed six Shone Ejecto These Ejectors are still giving perfect service.

SEND FOR COMPLETE BULLETIN

YEOMANS BROTHER COMPANY

225 INSTITUTE PLACE, CHICAGO,





The Growth of a QUALITY LINE



The H. W. Clark Company of Mattoon, Ill., manufacturers of the well known "CLARK METER BOX," and allied lines of meritorious water works materials, "Everything for the Water Works," now occupy their new modern and efficient factory just completed at Mattoon.

It will be remembered that the Clark Co.'s big plant of over 45,000 sq. ft. of floor space was completely destroyed in the tornado of May 26, 1917.

OUR NEW QUARTERS AND PRODUCTION

Wehave been operating in temporary quarters with a foundry located in Shelbyville, and our other allied departments operating in Mattoon, Ill. In this way we succeeded in taking care of our many customers and holding our business together in a satisfactory manner.

The new plant is built with steel sash windows and hot room valley roof construction. It is equipped with overhead travelling cranes and trolley system, and with the most modern, efficient and rapid operating machinery thruout.

The plant comprises an Engineering and Drafting Department, Pattern Shops, Gray Iron Foundry, Brass Foundry, Blacksmith Shops, Machine Shop, Sheet Iron Works, and Nickel Plating Plant. It is located on two spurs from the Illinois Central Railroad, being supplied with two tracks, one for incoming materials, and the other for outgoing finished products.

THE CLARK METER BOX

The "CLARK METER BOX," developed thru actual experience, perfected to the highest degree, has made good for over thirty years. It was first placed on the market in 1904, and thruout its use by thousands of water departments covering a period of over 25 years, the design has not been changed, as it has been thoroly demonstrated in all of this service, that the CLARK METER BOX is correct. This applies to the various sizes used and recommended; the height of throat, the overlapping lid, and most important, the wonderful CLARK lock, conceded to be the only correct locking device for this type of service. The frost protection features of the "CLARK METER BOX" have been marveled at by Water Works people generally, the meter being safe from frost therein without resorting to the use of any filling in of box, auxiliary lids, etc.

The "CLARK METER BOX" is now made in over 100 different models, and sizes, in addition to the popular first sizes submitted to the trade, thus fitting installation conditions in every climate. It cares for the largest size meters as well as the smallest; with the same uniform manner of housing, thus facilitating the reading and care of the meter in service. The CLARK is the ONLY system that accomplishes this.

The Clark line has grown continuously, every article and appliance resulting from actual operating water works experience, thoroly tested out in actual service, and offered to the trade not as an experiment but as a perfected money saver in every instance.

CLARK WATER WORKS SPECIALTIES

The line now comprises the "CLARK METER BOX" (in over 100 different models and sizes), "TEKSAGON" Meter Couplings, Riser Meter Couplings, and Clark Meter Coupling Yokes, Service Boxes (2 models), Valve Boxes (3 models), Valve Housings, Valve Housing Covers and Lids, Iron Collapsible Forms (for molding Box Bodies of concrete), Service Box Repair Lids, Water Meter Testers (in 7 models), CLARK WELL CONSTRUCTION, Special Water Works Gauges, the Clark Inspectors Sets, and Combinations of various kinds, Wireless Pipe Locators, Electric Indicators, Pressure Regulators, Air Relief Valves, Deep Well Pumps, Centrifugal Pumps, Pump Plungers, Electric Motors, and many other goods.

We also manufacture a complete line of municipal castings, and special water works and miscellaneous castings.

As stated above the CLARK line is all of ORIGINAL design; we have copied nobody, and no one has ever accused the Clark Co. of copying or taking advantage in any way of any other manufacturer.

The "CLARK METER BOX" as well as this entire line is covered by basic patents, and we have never been accused of in any way infringing other's patents. The entire line is covered by the "CLARK ABSOLUTE GUARANTEE," a warrant of satisfaction.

The policy of this company is QUALITY and SERVICE.

H. W. CLARK COMPANY

130 So. 17th Street — **MATTOON, ILL.**

Manufacturers of Everything for the Water Works

NEW YORK — **SAN FRANCISCO** — **SALT LAKE CITY** — **CHICAGO**

NORTHWESTERN STEEL FORMS

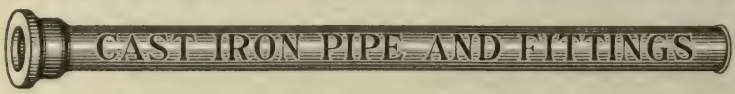
Northwestern Steel Forms are accepted as standard in every state. Used and recommended by engineers and contractors in every part of the country for construction of culverts, sewers, flumes, drains, tile and similar work. They are durable, economical, satisfactory.

Tile and culverts can be made on the job. For complete information write for Bulletin No. 49.

NORTHWESTERN STEEL & IRON WORKS
EAU CLAIRE WISCONSIN



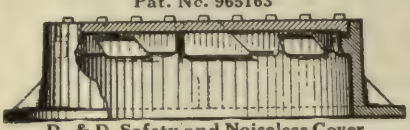
LYNCHBURG FOUNDRY COMPANY



Bell and Spigot and Flanged

GENERAL SALES OFFICE: Peoples Gas Building, CHICAGO, ILL.

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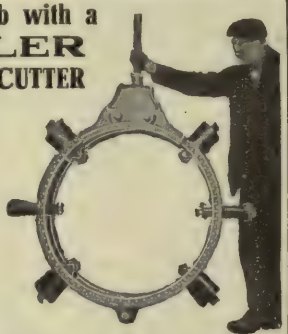
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30 N. La Salle Street Chicago, Ill.

We manufacture Manhole, Catch Basin and Sewerage Castings of all kinds. We make anything in Gray Iron. Write for our prices.

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CHATTANOOGA, TENN.
Manufacturers of Fire Hydrants, Valves, Valve Boxes, Sluice Gates, Meter Boxes and Water Works Supplies
ESTIMATES PROMPTLY FURNISHED

Cut that *Next* Job with a
STRICKLER
RATCHET PIPE CUTTER

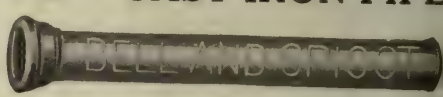


You will be surprised at the speed. At the Smooth, Clean, Square Cut. No filing or reaming after the Automatic Strickler has done its work. Each size cuts a range of pipe sizes.

Catalog on request.

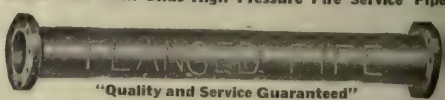
W. W. STRICKLER & BROS., Columbus, Ohio

Manufacturers of CAST IRON PIPE



for WATER—GAS—CULVERTS—SEWERS

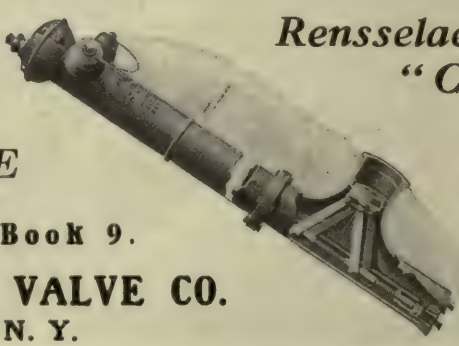
Special Castings:-Also Flexible Joint Pipe-Cylinders-Tubes
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They are Reliable When there is a FIRE



Rensselaer Improved "COREY" Hydrants are BEST

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"COST MOST TO BUILD"

VALVES

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The complete triangle line includes in addition to Valves — Asbestos Packed Cocks, Feed Water Heaters, Hot Water Generators and Power Pumps. Catalog sent on request





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WATER WASTE SURVEY?



Leak in Buffalo Water Main Discovered by Pitometer Survey

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Conducted by THE PITOMETER COMPANY have saved hundreds of thousands of dollars in many cities. Where the water consumption is over 100 gallons per capita daily for domestic and industrial services combined there is very probably leakage or dishonest use of water. The experts of the PITOMETER COMPANY are trained by experience to know where to look for trouble and they locate the leaks in a surprisingly short time using

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Especially designed for Municipal Water Works.

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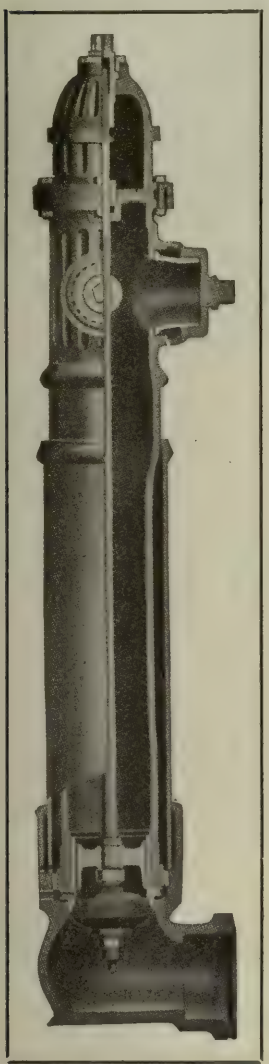
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"REDUCED" Fittings

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Eliminate sand from deep water wells with the

Cook Patent Brass Tube Well Strainer

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A. D. COOK
Manufacturer of Deep Well Pumps and Strainers
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Everything for Water Works and Sewage Disposal but the Pipe.

Corporation and Curb Cocks.

Goosenecks—made up with Anderson couplings which eliminate wiped joints.

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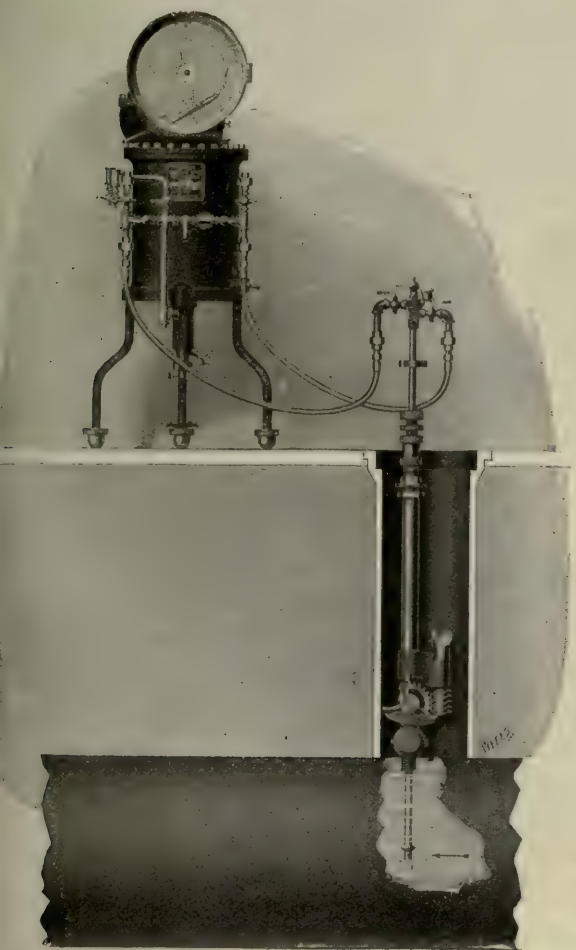
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NEW YORK

Holbrook Building
SAN FRANCISCO

Water Waste Surveys

THE SIMPLEX PORTABLE PITOT TUBE RECORDER

Affords an invaluable instrument for making WATER WASTE SURVEYS, and every progressive water-works manager should have one or more of these instruments available for immediate use when required, not only for this purpose but for determining the amount of water going to different parts of the system, the amount of discharge from any pumping unit, or the consumption of any large user or industrial plant.



The construction of the instrument is rugged. It is light and easily carried from place to place. The design is so simple and theoretically correct that the instrument may be counted upon to reliably measure and record velocities down to half a foot per second and below. The charts are readily put on and taken off and have uniform graduations, and a glance at the cut will show the simplicity of the pitot tube and its connections.

SIMPLEX VALVE & METER CO.

112 North Broad Street, Philadelphia, Pa.

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EDDY FIRE HYDRANTS
HAVE THE FOLLOWING POINTS OF SUPERIORITY:—



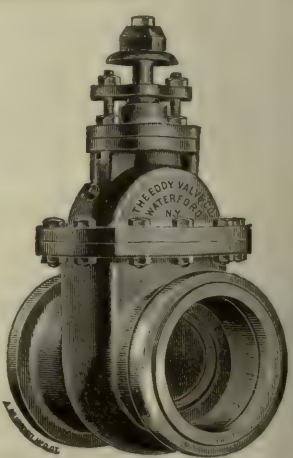
First:	General design.
Second:	Simplicity.
Third:	Durability—Thousands of these hydrants have been in use for a long period of time and are giving entire satisfaction.
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Twelfth:	Quickness and ease with which it can be repaired.
Thirteenth:	All parts are carefully made to standards and are interchangeable.
Fourteenth:	The materials used are the best that money can buy.
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Nineteenth:	Safety—Can be safely operated by any one and can be relied upon in emergencies.

EDDY VALVE COMPANY
WATERFORD, N. Y.

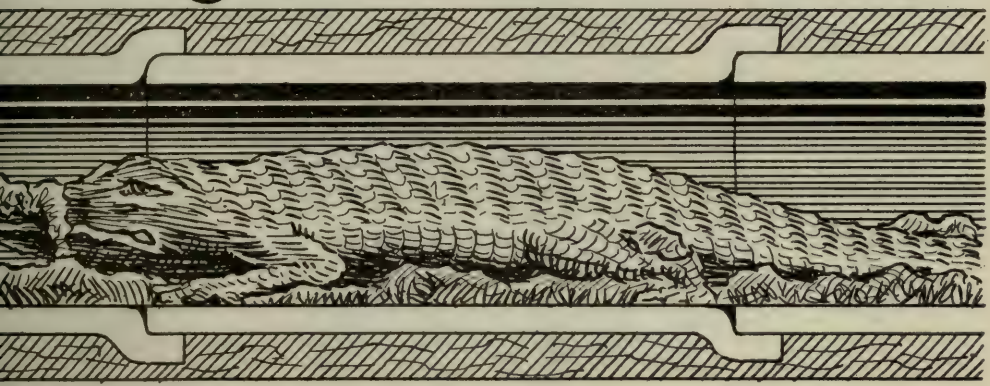
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FIRE HYDRANTS
GATE VALVES
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own South They Tried to Put n Alligator Thru the Sewer



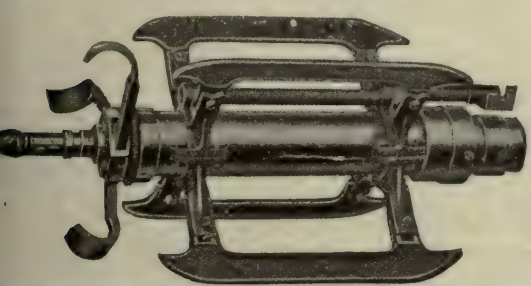
he poor alligator went on strike t, honest now, can you blame him?

The Turbine sewer machine, however, never refuses to do the dirtiest, hardest job in the sewer cleaning line. It is always ready for business, and the worse the conditions, the more pep it shows in digging in and getting the results for you in cleaning out your sewer system and keeping your sewer pipe in an unclogged and sanitary condition.

THE RESULTS SECURED IN OTHER CITIES

thru the use of the Turbine sewer cleaner are described in an illustrated folder which we shall be glad to send you on request. If other municipalities are bettering their health records thru the use of our machine, your municipality ought to follow suit. Think of the satisfaction of knowing that the sewers thruout your city are being kept properly cleansed at all times. You will be saved many anxious moments and the citizens in your town will feel that the man in charge of the sewers is rendering 100% service. The cost of the machine will be saved in a very short time.

In addition to the sewer cleaner, we are also manufacturers of sewer rods, which are just as high class and reliable as the Turbine sewer cleaner. Printed matter and prices sent on request.



Turbine Sewer Machine Company

197 Eleventh Street
Milwaukee, Wis.

SEWER CLEANING MACHINE

The Kuhlman Sewer Cleaning Machine will solve your troubles. Our machine is second to none.

PREWAR PRICE HAS BEEN ESTABLISHED

which should interest city officials to purchase now instead of waiting.

Mail us your address so that we can send you pictures and explanatory matter showing how other cities are keeping their sewers in good shape with this sewer cleaner.

Champion Potato Machinery Co.
338 Sheffield Ave.
Hammond Indiana

Trade **LEADITE** *Mark*
Registered U. S. Patent Office

For Jointing Cast Iron Water Mains

NO CAULKING required

Saves 50% to 65%

Write for information and price

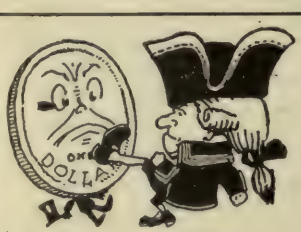
THE LEADITE COMPANY, Inc.
100 S. Broad Street Philadelphia, Pa.

The Best Material for CALKING Joints in Cast Iron Pipes is

Ulco Lead Wool

Write for particulars to

UNITED LEAD COMPANY
111 BROADWAY, N.Y. CITY



You don't have to consider the price

of flush-tanks and **Miller Siphons**—for two reasons:

In the first place, the value to the city's health of a clean, sweet, sanitary sewer, flushed regularly (and *automatically* with a **Miller Siphon**) is greater than any question of dollars and cents.

And secondly—

Getting right down to brass tacks and construction figures—a sewer line that is automatically and regularly flushed can be laid to a so much flatter grade than a sewer without flush-tanks that the saving in construction is often enough to pay for the flush-tanks.

And there you are!

But remember, the answer to honest-to-goodness *automatic* flushing is the **Miller Siphon.** It *is* automatic, and has been "delivering the goods" for twenty-five years.

You probably know all about **Miller Siphons.** If you don't, ask for catalog No. 15.

Pacific Flush-Tank Company

4241-3 E. Ravenswood Ave. **CHICAGO**
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Build Now
Construction adds to the permanent wealth of the Country and the Individual
U.S. DEPT. OF LABOR
W. B. WILSON
Secretary

2003-P

UNIVERSAL CAST IRON PIPE

On with the work!

HALTED by war, the development of water-works again has right of way and nder the spur of neces- ity progress, even greater han that of heretofore, ill be made.

n important factor in he successful operation f water works and sew- rage systems is the nec- ssary pipe lines. And f pipe lines the most nportant factor is that f joints since **a pipe line s no stronger than its eakest joint.**

Universal Pipe lines give the highest in joint efficiency by reason of each joint being a self contained part of the standard 6 foot lengths of Universal Pipe—iron to iron **Cast Iron**—positive permanence assured.

Requiring the minimum in cost, labor, time and material to install and by giving enduring efficient service under all conditions Universal Cast Iron Pipe has earned the valued endorsement it receives from many engaged in the successful construction and maintenance of water-works.



Universal 12 x 6 Tee with 6″ hub for connection to old lateral



l appearances, veteran pipe ers, but the gang had no previous experience.

Binghamton, N. Y. has 16,000 ft. of 12″ Universal which by efficient service has earned its endorsement by the water works officials—stated in letters of commendation and satisfactory reports.

Here Universal replaced an old line of 6″ bell and spigot. A few instances of how easily this was accomplished is shown in the photos.



Tested O. K. and trench ready for refilling

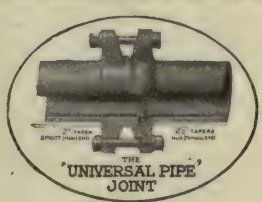
Wrenches the Only Equipment.



No Packing— No Pouring— No Gaskets.



Universal Gate Valve and 90° Bend at right, connected to old line



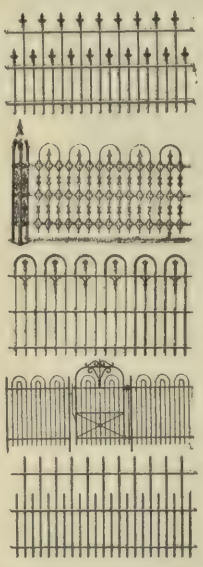
Pipe and Joint Are "One"

THE CENTRAL FOUNDRY COMPANY

90 WEST STREET
NEW YORK

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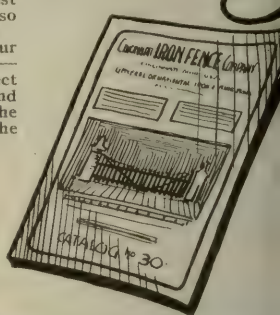
Over 100 Different Styles of IRON FENCE



A few more enterprising Dealers may secure a monop ly on the sale of the most ornamental, attractive and reliable Iron Fence now on the market. Large, quick sales and big profits with no stock to carry or money tied up. **CINCINNATI IRON FENCE,** in a class by itself, is sold from the catalog—sent anywhere upon request. Write for it to-day. This business practically unworked and hundreds of residences, farms, schools, hospitals, institutions and cemeteries are immediate prospects. Our designs are all irresistibly attractive and many cheaper than wood or wire. **IRON FENCE** has tremendous talking points and is easy to sell. Adds 100% to the appearance of property and greatly increases its value. Lasts forever and does not have to be repaired or worried about, as is the case with wood or wire. Full line also of Ornamental Entrance Gates, Settees, Flower Vases, Window Guar s, Pipe Railing. Tree Guards, Stable Fixtures, etc. We offer dealers the geatest variety of designs and the largest profit per sale. We give close personal service and also submit original designs to meet special requirements.

All you do is write for our 68 page catalog today—let your customer select the design wanted, send us the order; we ship the fence, you bill it and the profit is yours. Don't delay. This is the season when big money can be made.

Writ fo thi 68 pag Catalo



Cincinnati Iron Fence Co.
3300-3308 Spring Grove Ave. Cincinnati

Northwestern Mixers

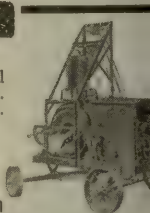


Unequalled for speedy, thorough, economical mixing. Occupy small space. Easily and quickly moved from one part of job to another. Simple, safe and sturdy. Engine is frost-proof, fool-proof and durable. Burns gasoline or kerosene. Cuts fuel bills to the minimum.

PRICE AND PERFORMANCE WILL PLEASE EVERY BUYER

Bulletin No. 47 gives complete information. Write for it to-day.

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THE FOOS

WATERWORKS ELECTRIC LIGHT and POWER SERVICE

Fuels
Producer Gas
Natural Gas
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Sizes
6 to 325 hp.



THE FOOS GAS ENGINE CO. SPRINGFIELD, OHIO

ATLANTIC PUMPING ENGINES



HAROLD L. BOND COMPANY, 383 W. ATLANTI BOSTON, M.

AMERICAN CAST IRON PIPE CO

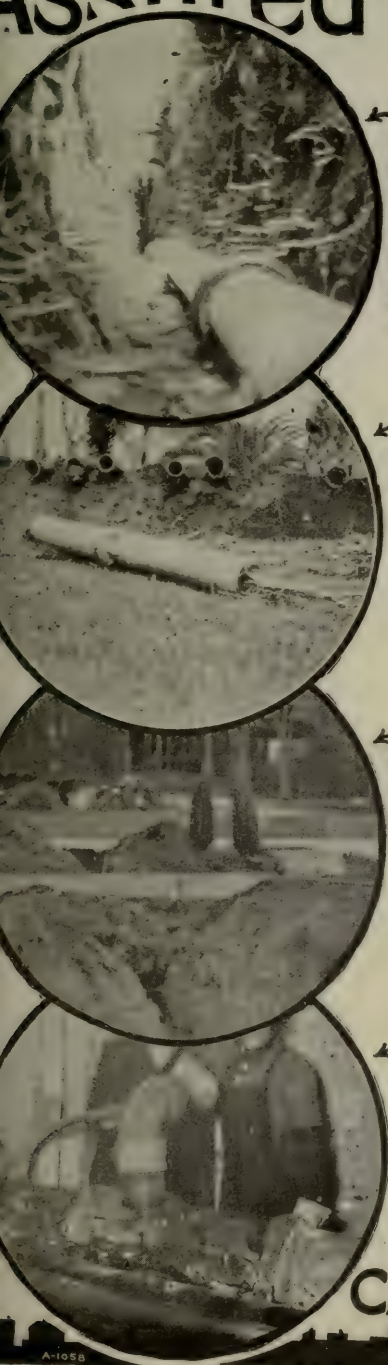
BIRMINGHAM, ALA.

MANUFACTURERS OF **CAST IRON PIPE AND FITTINGS**

SALES OFFICES

Birmingham, Ala., Box 908
Columbus, Ohio, 607 New Hayden Bldg.
Minneapolis, Minn., 712 Plymouth Bldg.
New York City, No. 1 Broadway
Chicago, Ill., 512 1st National Bank
Dallas, Tex., 1217 Praetorian Bldg.
Kansas City, Mo., 716 Scarritt Bldg.
Los Angeles, Cal., 339 Citizen Nat. Bank B
San Francisco, Cal., 711 Balboa Bldg.

Permanent Building Drainage Assured



Showing how tree roots from every direction attack the cement joints of vitrified pipe

Roots upon entering a joint, grow in both directions in the house sewer

And this is the kind of thing that must be done in replacing a vitrified house sewer

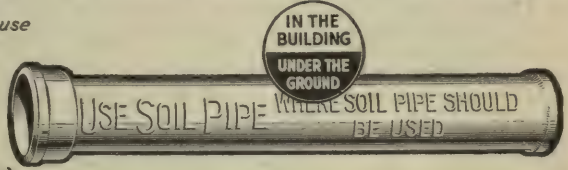
Showing result of expansion due to alternate flow of hot and cold water in vitrified line

¶ Production of Cast Iron Soil Pipe and Fittings, made during the war, was restricted to Government Cantonments, Housing Projects, and other essential needs, since the need for huge quantities of iron was vital for war materials 'over there.'

¶ The demand for metal was so pressing that the War Industries Board at one time seriously considered the necessity of entirely eliminating all new plumbing installations. On account of this condition certain war measures were adopted which permitted the use of substitutes for Cast Iron Soil Pipe. This war measure is, we understand, now being commercialized by selfish interests to promote the use of products which, experience has proven, do not guarantee permanent sanitation in building drainage.

¶ The unquestioned, and we might say unequalled service record of Cast Iron Soil Pipe for sanitation and permanence, proves beyond question its justifiable claim to leadership in this field.

¶ The removal of all war restrictions by the government, permits the return of Cast Iron Soil Pipe, and wherever used provides a safe, sanitary, economical and permanent carrier of building drainage.



Specifications and illustrated literature will be mailed upon request by any or all of the following independent and competing makers of Cast Iron Soil Pipe and Fittings

Krupp Foundry Co	Lansdale, Pa.
Medina Foundry Co	Medina, N. Y.
Medina Iron & Brass Co	Medina, N. Y.
National Foundry Co. of New York, Inc	Brooklyn, N. Y.
National Pipe & Foundry Co	Attalla, Ala.
Reading Foundry and Supply Co	Reading, Pa.
Salem Brass & Iron Manufacturing Co	Salem, N. J.
Sanitary Company of America	Linfield, Pa.
Somerville Iron Works	Somerville, N. J.
Standard Foundry Co	Anniston, Ala.
Superior Manufacturing Co	Bessemer, Ala.
Union Foundry Co	Anniston, Ala.
Weishittel & Son Co., A	Baltimore, Md.
Wetter Manufacturing Co., H.	Memphis, Tenn.
Abendroth Brothers	Port Chester, N. Y.
Agricola Pipe Co	Gadsden, Ala.
Alabama Pipe & Foundry Co	Anniston, Ala.
American Foundry & Pipe Co	Penns Sta., Ala.
Anniston Foundry Co	Anniston, Ala.
Bessemer Soil Pipe Co	Bessemer, Ala.
Casey-Hedges Co., The	Chattanooga, Tenn.
Central Foundry Co., The	New York, N. Y.
Charlotte Pipe & Foundry Co	Charlotte, N. C.
Costa Pipe & Foundry Co	Birmingham, Ala.
Crown Pipe & Foundry Co	Jackson, Ohio
Gadsden Pipe Co	Gadsden, Ala.
Haines, Jones & Cadbury Co	Philadelphia, Pa.
Johnson Co., J. D.	New York, N. Y.

CAST IRON SOIL PIPE

A-1058

Beauty and Safety

For

City Parks, Play Grounds
Retaining Walls
Jails and Courtyards
Cemeteries, Reservoirs
and Bridges

are both assured in



AGENTS WANTED

STEWART IRON FENCE
"The Standard of the World"

Chicago recognizes Stewart value and has installed approximately 45,000 feet of Stewart fence and 50 pairs of gates of the design here illustrated.

The Stewart Catalog will be a valued help to officials and others interested in the city improvement.

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showing a wide selection of designs for purposes mentioned—also line of Lamp Standards, Bracket Lanterns, Settees, Vases and ornamental iron & wire work

The Stewart Iron Works Co., Inc., No. 527 Stewart Block CINCINNATI, OHIO.

Sales and Construction representatives in Principal Cities

The World's Greatest Iron Fence Builders



LUDLOW GATE VALVES

For Water, Steam, Gas, Oil, Hydraulic or Electric Operated.

All styles, any size, all pressures.

FIRE HYDRANTS

Frost-Proof, Simple-Efficient

All parts removable without digging up hydrant. Special device prevents street from being flooded should stand pipe be broken. Minimum expense to install and maintain.

Write today for illustrated catalog of our Valves and Fire Hydrants.

THE LUDLOW VALVE MFG. CO.
TROY, N. Y.

Branch Offices

New York, Philadelphia, Chicago, Pittsburg, Boston, Kansas City

Statement of the Ownership, Management, Circulation, etc., Required by the Act of Congress of August 24, 1912, of The American City (Town and County Edition), Published Monthly at New York, N. Y. April 1, 1919.

State of New York, County of New York, ss.:

Before me, a Commissioner of Deeds, in and for the State and County aforesaid, personally appeared EDGAR J. BUTTENHEIM, who, having been duly sworn according to law, deposes and says that he is the Business Manager of THE AMERICAN CITY (Town and County Edition) and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher	THE CIVIC PRESS, Inc.,	154 Nassau St., N. Y.
Editor	HAROLD S. BUTTENHEIM,	" "
Managing Editor	HAROLD S. BUTTENHEIM,	" "
Business Manager	EDGAR J. BUTTENHEIM,	" "

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

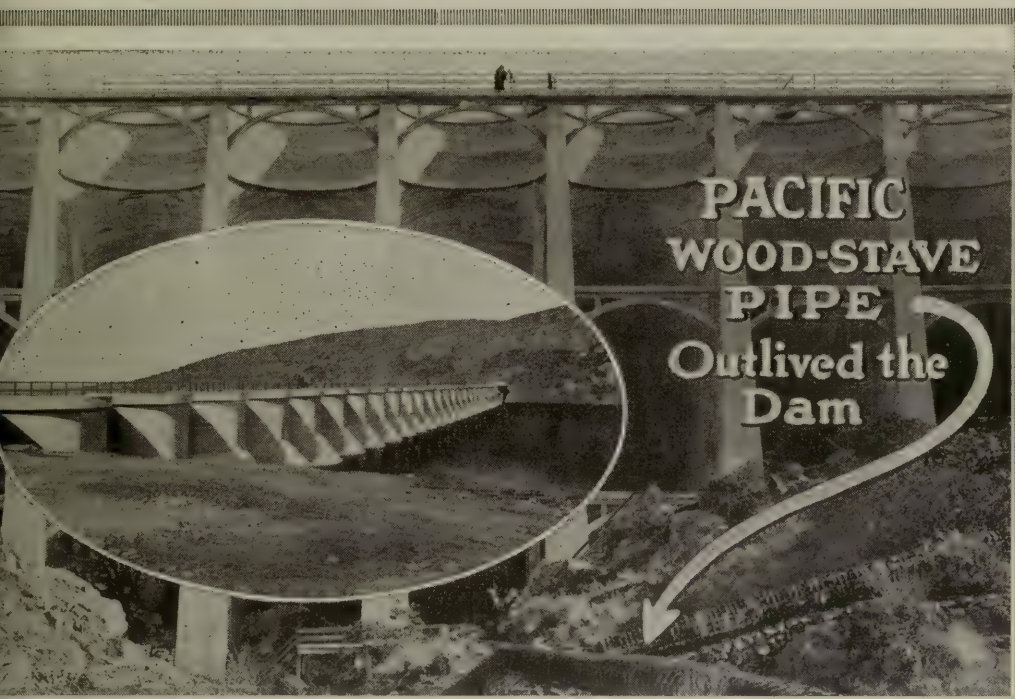
THE CIVIC PRESS (Incorporated)	154 Nassau St., N. Y.
Stockholders: HAROLD S. BUTTENHEIM,	EDGAR J. BUTTENHEIM,
HERBERT K. SAXE	154 Nassau St., N. Y.
EDNA B. VAN BUREN	Philadelphia, Pa.
MARY B. CASH, Madison, N.J.	T. R. KENDALL, 154 Nassau St., N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

EDGAR J. BUTTENHEIM, Business Manager.

Sworn to and subscribed before me this 27th day of March, 1919.
H. RADNITZ
New York County Clerk's No. 1.
Commissioner of Deeds
New York County Register's No. 21014
(My commission expires February 11, 1921.)



Twenty-two Years of Service —and Still Good Pipe

—Two Dams Were Needed— but only One pipe line

We've many instances on record where wood-stave pipe has given years of service, but the line installed for the Cuyamaca Water Co. near San Diego, Cal., is a particular case. It was built in 1896 and at the same time a dam was constructed to impound the water it carries. In 1917 a new dam had to be built, but the self-same pipe-line stayed on the job —perfectly good and ready to do its work again. It's there today and will be for years to come.

Long life is a characteristic of Pacific wood-stave pipe. Every care is taken in its manufacture from start to finish. Materials are selected with the utmost care. It is built by experts. Every detail is watched from the time the first stave is cut until the finished line is laid and delivered. You are assured of getting the best it is possible to construct when you buy Pacific Pipe.

A factory equipped to handle any order with dispatch is at your service. A stock of clear, well-seasoned lumber is always on hand. A staff of trained engineers, whose business it is to study your problems, insures the right start. Years of experience in the manufacture of wood-pipe enables us to deliver a product which will stand up under various conditions.

Tell us what you plan to do and leave the details to us—it's our business to design, lay out and construct wood-stave pipe. We'll work out your problem. Write today.

PACIFIC TANK & PIPE CO.

THE STANDARD SINCE 88

310 Market Street, San Francisco, Cal.
909 Trust & Savings Bank Bldg., Los Angeles, Cal.

Branches

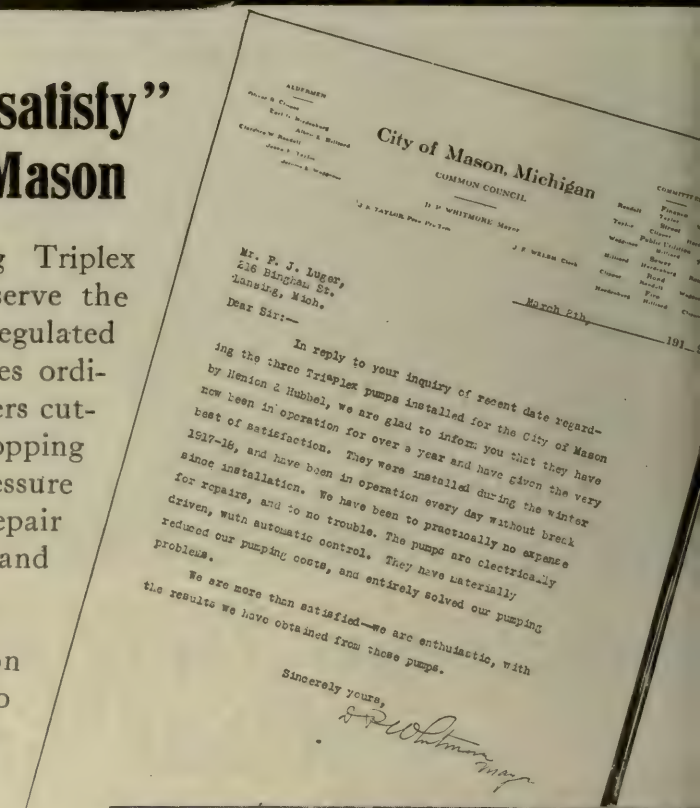
New York — Philadelphia — Salt Lake City

Deming POWER PUMPS

"More than satisfy" the City of Mason

THREE Deming Triplex Power Pumps serve the City of Mason, so regulated that one pump handles ordinary demands, the others cutting in, starting and stopping automatically, as pressure demands require. No repair expense, no trouble, and pumping costs are cut.

Complete information on Deming Pumps to fit all specifications gladly sent to municipal executives on request.



City of Mason, Michigan
COMMON COUNCIL

H. P. WHITMORE, Mayor

March 5th, 191

Mr. P. J. Luger,
236 Bingham St.
Lansing, Mich.

Dear Sirs:—

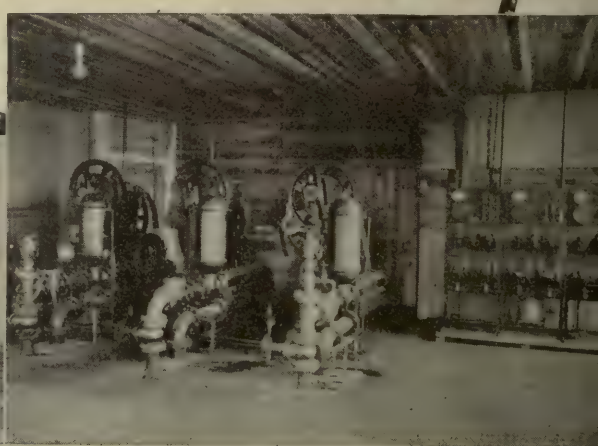
In reply to your inquiry of recent date regarding the three Triplex pumps installed for the City of Mason by Henion & Hubbell, we are glad to inform you that they have now been in operation for over a year and have given the very best of satisfaction. They were installed during the winter 1917-18, and have been in operation every day without break since installation. We have been to practically no expense for repairs, and to no trouble. The pumps are electrically driven, with automatic control. They have materially reduced our pumping costs, and entirely solved our pumping problems.

We are more than satisfied—we are enthusiastic, with the results we have obtained from these pumps.

Sincerely yours,

H. P. Whitmore Mayor

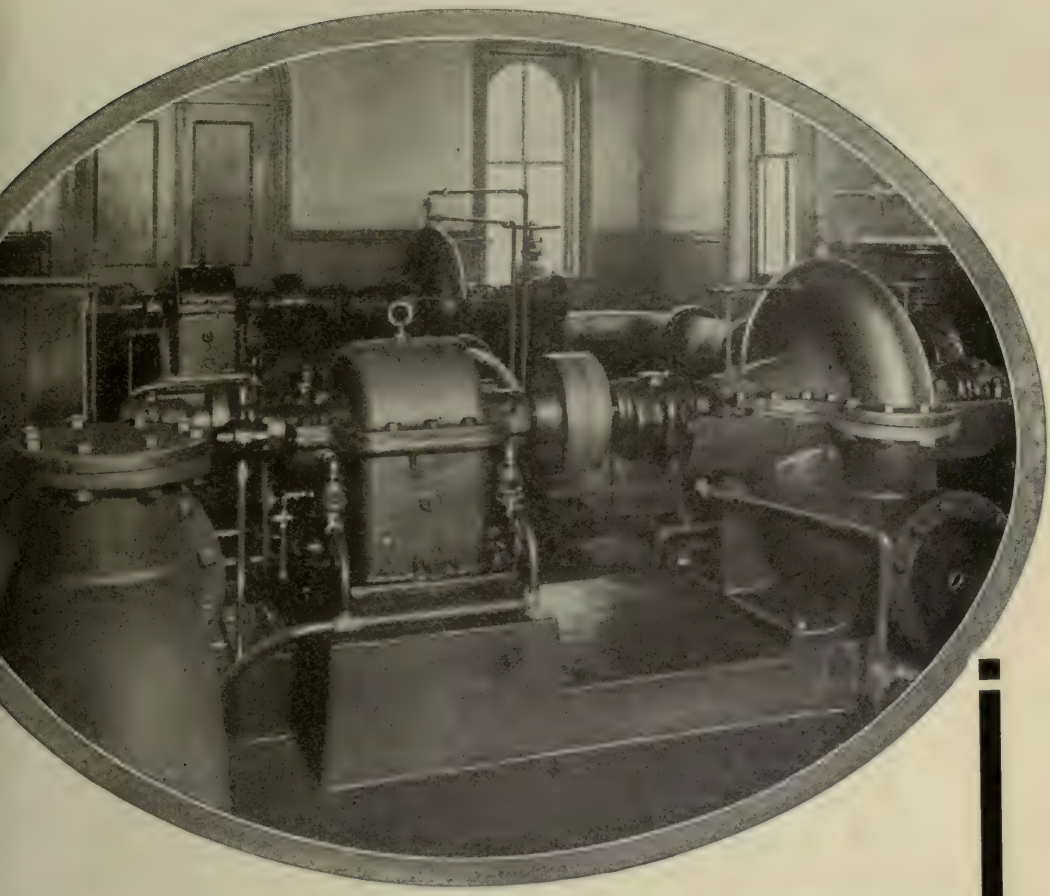




THE DEMING COMPANY, SALEM, OHIO

DEMING DISTRIBUTORS

Chicago—Henion & Hubbell
Pittsburgh—Harris Pump & Supply Co.
New York—Ralph B. Carter Co.
Philadelphia—W. P. Dallett Co.
Boston—Chas. J. Jager Co.
Denver—Hendrie & Bolthoff
Buffalo—Root, Neal & Co.
Louisville, Ky—Laib Co.
Charlotte, N. C.—Thos. B. Whit
San Francisco—Crane Co.



Always Exceeds the Contract Guarantee

The illustration above shows two 10-inch Allis-Chalmers Type S Pumps connected to geared steam turbines. The capacity of the pumps is 5,000,000 gallons a day each against 150 foot head. Pumping units of this kind have been installed for the City of New Brunswick, N. J., City of Elmira, N. Y., City of Arlington, Mass., and other cities. Allis-Chalmers Centrifugal pumps give just as high efficiency under actual operating conditions as when tested in our shops.

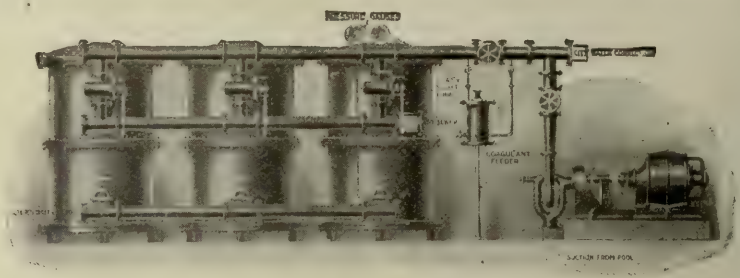
Our bulletin No. 1632 C A tells how our guaranteed pumps are built. If your city is interested in pumps for water supply, sewage pumping stations, fire protection or general service, write for our bulletins.

WRITE FOR ILLUSTRATED BULLETIN 1632 C.A.

ALLIS-CHALMERS

MILWAUKEE

NORWOOD FILTERS



TYPICAL THREE UNIT FILTER OUTFIT

Two of Many Unsolicited Testimonials.

I have been able to follow up pretty closely at least one of your formal contracts, namely, Peabody College, Nashville, Tenn., and we preferred your specification over several others that have been under consideration.

Name upon request.

The Norwood Engineering Co.,
Florence, Mass.

Gentlemen:

It is now more than a year since you installed in connection with our swimming pool a Norwood filter. It affords me pleasure to say to you that the filter, pump and motor have given entire satisfaction from the date of installation to the present time, both as to mechanical operation and as to the efficiency in caring for the water.

The pool was not emptied out for the first 13 months and then only for the purpose of cleaning the tile.

We are much pleased with your product, its service and the businesslike and courteous treatment which you have furnished us.

Sincerely yours,
Name upon request,
Gen. Secretary.

Refiltration of pools Saves Water. Saves Heat and insures a clean, bright, sparkling, and sanitary pool at all times.

NORWOOD ENGINEERING COMPANY
FLORENCE, MASS.

WATER PURIFICATION

Gravity and Pressure Filters, and Chemical Feeding Devices



Operating Floor of Filtration Plant at Akron, O.

Original installation made in 1913, capacity 20,000,000 gallons daily

Plant increased 50% within 4 years, testifying to the merits of the **WHEELER FILTER BOTTOM.**

Total Daily capacity our municipal filtration plants **One Billion** gallons, supplying 500 communities.

Write for bulletin 19-3

The New York Continental Jewell Filtration Co.

General Office and Works: NUTLEY, N. J.

NEW YORK CHICAGO SAN FRANCISCO MONTREAL



WO RKS OF PITTSBURGH FILTER AND ENGINEERING COMPANY

Largest and best equipped plant of its kind in the country, where we manufacture all kinds of Filter Equipment, Ventura Meters and Heavy Duty Oil Engines.

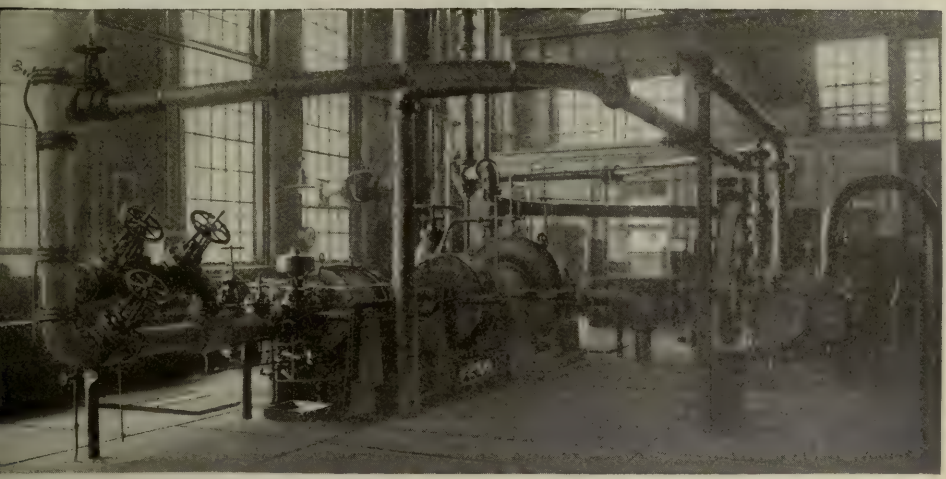
PITTSBURGH FILTERS

Supply

800,000,000 Gallons of PURE WATER to over 200 Cities

PITTSBURGH FILTER & ENGINEERING CO.
PITTSBURGH, PA.

NEW YORK WORKS: OIL CITY, PA. KANSAS CITY



De Laval Geared Steam-turbine-driven Centrifugal Pump; 30,000,000 gal. per day against 100 ft. head.

A SIMPLE AND COMPACT PUMPING UNIT

The 30,000,000-gal.-per-day De Laval Turbine-driven Centrifugal Pump in the above picture has no pump valves and no complicated valve gears. The lubrication is simple and automatic; no cylinder oil is required. The delivery is uniform, without pulsation or shock, and no vibration is set up.

A heavy and expensive crane is not required for overhauling, as all parts are accessible upon lifting the light casing covers of pump, gear and turbine. This is done without disturbing piping connections.

The few parts which are subject to wear, such as bearings, turbine blades, pump wearing rings and impellers, are made to limit gauges and are easily replaced, no fitting being required.

De Laval Geared-Steam-turbine-driven Centrifugal Pumps offer duties higher than are offered by any reciprocating unit except triple-expansion engines, and very close to the best shown by the latter. The De Laval Pump in actual service usually shows a higher duty per million B.t.u. than does the best reciprocating unit. In total cost of pumping including fixed charges it far excels.

Each unit is guaranteed as to capacity and efficiency and is fully tested before leaving the shop.

ASK FOR PUBLICATION 64

DE LAVAL STEAM TURBINE CO.

385 JOHNSON AVE. TRENTON, N. J.

70



LONGWOOD DRIVE, CHICAGO
Stanolind Paving Asphalt was used in building this splendid Asphalt-Macadam Road.

After Three Years of Service

THE PRESIDENT OF THE LONGWOOD DRIVE ASSOCIATION WROTE TO THE CONTRACTOR WHO LAID THIS ROAD

"At a recent meeting of the Officers and Directors of this Association, the question of our pavement was brought up for discussion, and it was the consensus of opinion that it is absolutely the best street of its kind in Chicago, after three years of service in extreme weather."

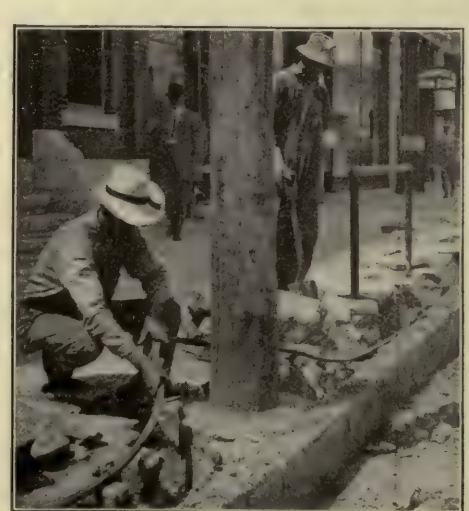
That letter was written a year ago and the road is as good today as it was the day it was finished.

Write for our free booklet "STANOLIND PAVING ASPHALT." It gives reliable information and complete data on Asphalt-Macadam and other types of asphalt roads.

STANDARD OIL COMPANY (INDIANA) 910 S. MICHIGAN AVENUE CHICAGO, ILLINOIS

We also manufacture road oil for dust laying purposes

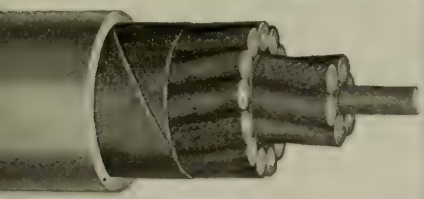
SIMPLEX STEEL TAPED CABLES



Hundreds of towns and cities today use SIMPLEX Steel Taped Cables to distribute current for street lighting. Satisfactory service is assured because the cables are designed for just this type of underground distribution.

Low cost of installation and maintenance make them desirable from an investment standpoint. Streets need not be torn up; pipes, manholes and catch basins need not be moved, and no conduit is required.

SIMPLEX WIRE & CABLE Co
MANUFACTURERS
201 DEVONSHIRE ST. BOSTON
CHICAGO SAN FRANCISCO



Lead Encased
nderground Cables

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NDERGROUND CABLES as
ey must continue to function year
and year out, sometimes under
ing conditions resulting from
essive moisture, heat from steam
es, electrolysis caused by stray
rents. Failures mean costly re-
rs and perhaps great loss from
erruption of service.

azard Rubber Insulated Under-
und Cables are the most reliable
underground work, whether for
ıt or power, low or high tension.
cords on file show that some of
first Hazard Cables made a
re of years ago are still deliver-
100% efficiency.

Hazard
RUBBER INSULATED
WIRES & CABLES

made with the right quality of
ber insulation, which insures
sistently good service even un-
adverse conditions.

Made for Users Who Want the Best"

HAZARD MFG CO
WILKES-BARRE PA

EW YORK 9 CANAL ST | PITTSBURGH 1ST NAT'L BANK | CHICAGO 552 W ADAMS ST
AKERS OF QUALITY WIRE ROPE SINCE 1848



TO INSURE DUSTLESS, WEEDLESS, DURABLE ROADS

use the most practical, simple, inexpensive and efficient dust preventive and road binder

SOLVAY
Granulated
Calcium Chloride

When spread on a road surface, the Calcium Chloride absorbs and retains moisture even in the driest weather, thereby preventing dust by aiding the natural cementing of the surface and eliminating rutting and raveling.

It is an odorless chemical salt, harmless to clothing and shoes and will not discolor or injure varnish, horses hoofs, or auto tires.

Two Applications of Solvay Granulated Calcium Chloride a season will keep a road firm, clean and compact. Its lack of all disagreeable features makes it the most suitable treatment for residential streets, boulevards, parkways and paths—it costs less than sprinkling and at the same time keeps the surface in better condition.

Illustrated booklet sent on request.

SEMET-SOLVAY CO.
SYRACUSE **NEW YORK**

BITOSLAG

REG. U.S. PAT. OFFICE

Why is it so Successful?



Bitoslag on Third Avenue in Jefferson County, Ala., leading from Birmingham.

NOISELESS NON-SKIDDING DURABLE

BITOSLAG is an improved asphaltic concrete pavement; it is composed of finely ground slag, filler and an especially prepared asphalt, combined in a scientific manner and manufactured in regular asphalt paving plants.

BITOSLAG pavement is a step in advance of other forms of pavement.

It is non-susceptible to extremes of temperature changes during Winter and Summer. It withstands heavy traffic. It is ideal for resurfacing old macadam roads.

BITOSLAG presents a paving surface that is sightly; pleasant to ride over; comparatively non-slippery and non-skidding; will not shove, push or creep under traffic. In short, it approaches the ideal or perfect pavement more closely than any which has heretofore been offered on the market.

All highway officials, street superintendents and tax payers should become well acquainted with BITOSLAG and demand it for city and country pavements.

FOR ILLUSTRATED PRINTED MATTER AND FURTHER INFORMATION SEND YOUR ADDRESS TO

BITOSLAG PAVING Co

90 West Street - New York City



Heavy Traffic *Improves* Roads of Atlantic Bituminous Macadam

Bituminous pavements or roads are adaptable to all conditions of traffic. They offer a resilient surface that is not injurious to horses' hoofs. They actually *improve* under the tread of heavy trucks, for the surface is only *ironed out* instead of cracking or wearing.

Maintenance is an all important point in road-building. Atlantic Bituminous roads last longer because Atlantic materials are studied and developed products approved by many of America's leading highway engineers.

If your work is re-surfacing,

ATLANTIC
Surface-Treatment Asphalt

will smooth out the ruts and prolong the life of the road.

If your problem is road-building, there is an Atlantic Asphalt to meet your requirements.

We invite inquiries from highway officials, engineers and contractors as to the methods and cost of construction of all types of asphalt roads. Our staff of trained highway experts is at your command.

"The Atlantic Highway Digest," issued monthly in the interests of good roads, will be mailed you free on request. Write for it today.

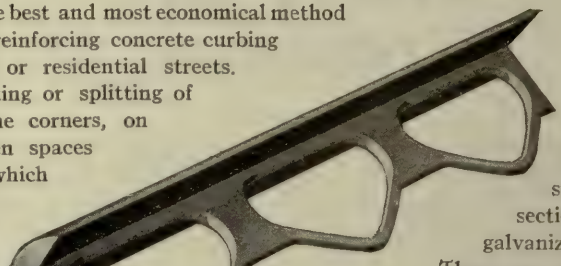
THE ATLANTIC REFINING COMPANY
PHILADELPHIA, PA.

Manufacturers of Atlantic Asphalts

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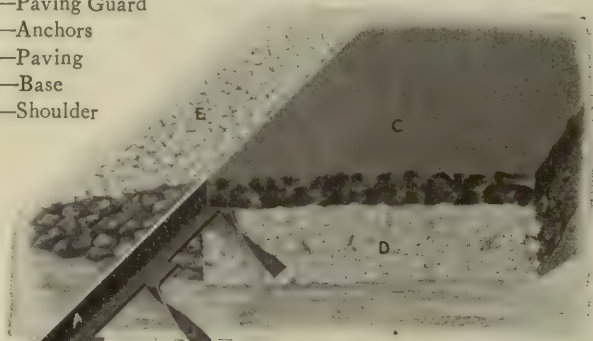
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Two editions of THE AMERICAN CITY are published each month, both containing the same number of pages. The distinction in contents is indicated above. The subscription price of either edition is $3.00. For $1.00 additional per annum, any subscriber may receive both editions; or any subscriber may have his name transferred from the mailing list of the City Edition to that of the Town and County Edition, or vice versa, without extra charge. Canadian subscribers pay 50c extra per year to cover postage; other foreign countries $1 per year extra.

Back numbers of THE AMERICAN CITY are kept in stock by the publishers.

Roll Call

of White Truck Fleets In Actual Service

THE following is a list of cities, counties and states who own ten or more White Trucks, showing the yearly progress in added trucks per owner. The buyer of one or many trucks can have no better guide than the experience of those whose trucking volume affords a comparative knowledge of results.

	1910	1911	1912	1913	1914	1915	1916	1917	To-day
City of Atlanta	0	3	6	8	10	10	11	11	15
City of Baltimore	0	3	4	7	14	14	29	30	31
City of Boston	0	2	9	12	17	18	18	19	22
City of Chicago	0	0	0	1	4	10	27	38	47
City of Cleveland	0	2	7	14	15	19	23	32	36
City of Manila, P. I.	0	0	3	3	3	7	8	11	11
City of Nashville	0	0	0	1	1	1	1	3	12
City of New York	0	1	7	11	12	13	13	13	13
City of Pittsburgh	0	2	9	14	14	15	15	15	15
City of San Francisco	0	0	0	1	1	1	1	3	10
City of St. Louis	0	0	0	0	4	6	9	10	14
Commonwealth of Mass.	0	1	4	4	4	5	11	11	11
Hawaii County, T. H.	0	0	2	9	9	9	10	11	16
Onondaga County, N. Y.	0	0	0	0	1	3	5	10	16
Prov. of New Brunswick	0	0	0	0	0	0	20	20	20
Prov. of Nova Scotia	0	0	0	0	0	0	0	0	10
State of New Jersey	0	0	0	1	1	1	1	6	16
State of New York	0	0	3	3	3	5	29	37	37
State of Pennsylvania	0	0	0	0	1	2	5	15	15

There are 2,774 White Truck Fleets now in actual service, totaling 33,139 White Trucks. No single truck installations are included in these figures

A copy of the complete Roll Call will be sent to anyone upon request

THE WHITE COMPANY
CLEVELAND

TOWN & COUNTY EDITION
of
The American City

Tribune Building
New York

JUNE, 1919

Volume XX
Number 6

Bituminous Macadam Road Construction

By A. W. Dean
Chief Engineer, Massachusetts Highway Commission

A BITUMINOUS macadam pavement is one having a wearing course of macadam with the interstices filled with a bituminous binder, applied by a penetration method.

Such pavements were built in a rather crude manner in England and France in the early part of the nineteenth century, but were nowhere extensively built until little more than ten years ago, when the change in vehicular traffic and consequent increased destruction of waterbound macadam pavements made necessary the construction of a surface to withstand the new destructive forces on the roads. In the United States the year 1908 marks the real beginning of this type of pavement, altho a few small experiments or attempts had been made previously. The first results achieved, while at the time appearing successful, were not durably satisfactory on account of the fact that improper materials and workmanship were used. Further experimental construction and careful observa-



A BITUMINOUS MACADAM ROAD IN BROOKFIELD, MASS., ON THE MAIN BOSTON-NEW YORK HIGHWAY

tion of results obtained by varying the character of material and the method used have resulted in a widespread use of this type of pavement at the present time, and when properly constructed it has proved to be an economical type where the vehicles to be propelled over it are not extremely heavy.

The Foundation and the First Course

In the construction of this pavement, as in that of any so-called permanent type, proper drainage and foundations are absolutely essential. Moisture and frost action under the road crust are just as destructive as in the cheapest or most expensive pavements.

If the subsoil is a gravel or suitable sand, no artificial foundation may be necessary, but if of clay or other improper material a foundation course consisting of stone or coarse gravel should be placed. If the foundation course is of stone, the interstices should be thoroly filled with gravel to prevent the clay subsoil from gradually working up and filling the voids in the stone, thereby permitting the moisture to permeate and destroy the foundation and pavement during frost action.

Upon the properly prepared natural or artificial foundation the first course of broken stone should be spread evenly and to sufficient depth to be of the desired thickness after rolling. No universal rule can be made covering the thickness of this course, as the local conditions vary so extensively. For example, in some localities the subsoil and the materials available in the immediate vicinity are of such nature that an artificial foundation of stone 10 inches or more in depth may be laid and the first course of the pavement need be only about 2 inches in thickness. This is economical and satisfactory in localities where suitable stone for foundation is plentiful, but stone suitable for the first course of the macadam has to be imported at considerable expense. On the other hand, if the subgrade is a proper one, so that artificial foundation is not necessarily used, the first or bottom course of the macadam should be not less than 4 inches in thickness after rolling, and, if heavy loads are to be sustained, a thickness of 6 inches is desirable.

The stone in this course should be of uniform and good quality, and should spread in such manner that there may no segregation of large or small stone. T stones composing this course may vary size from ½-inch to 3 inches in their lon est dimensions, provided, however, that t percentage of the small size shall be ve small. If the course is 4 inches or less thickness, the best results are obtained, ho ever, by using stone varying in size fr 1¼ to 2½ inches. The same minimum si is preferable in a 6-inch course, but t maximum size may then be 3 inches.

In laying this course the same metho should be used as in the laying of ordina waterbound macadam, including thoro co paction by rolling, and securing a uniform smooth surface. Unlike the first course waterbound macadam, however, the voids th's first course must be filled with sto dust, fine gravel, or sand, in order to pr vent wasting of bitumen by penetrati into this course during the construction the top course. It is essential that the su face of the bottom course be even and wit out depression before laying the top cours After the construction of this course completed, all surplus dust and fine m terial should be swept off, leaving the upp stones bare to receive the second or bit minous course.

The Second Course

After the completion of the first cour as above set forth, the second course spread at such thickness that it will be inches thick after rolling if for medium light vehicular traffic, or 3 inches thick for heavy vehicles in large volume.

It is extremely important that the sto used in this course be of good quality, un form in character, and so spread that the is no segregation or large or small-siz stones. If building for light weight v hicles only, the stone used may have French coefficient of wear as low as 8 a a hardness value of 8, but for heavy v hicles a better quality of stone should obtained if possible, using in such case stone having a French coefficient of n less than 12, and preferably even greate and a correspondingly higher hardne value.

The best and most lasting results are o tained if the sizes of the stone in th course vary from ¾-inch to 2½ inche



A PORTION OF THE MASSACHUSETTS STATE HIGHWAY, BUILT OF BITUMINOUS MACADAM, PALMER, MASS.

ith the larger sizes predominating. This as been proved, even tho it appears incon- stent to use a 2½-inch stone in a course inches thick.

Extreme care should be had in the laying nd rolling of this course to have it uniform i its component sizes of stone and rolled) a uniform thickness. The rolling should e thoro, in order to reduce the voids and iake the surface hard and smooth, altho ot as thoro as in the case of waterbound iacadam roads.

The Bituminous Coat

After rolling, the bituminous material hould be applied at a temperature of 250°) 300° F. with a mechanical distributor that ill force the material onto the surface niformly, such force being equivalent to iat obtained under a pressure of 30 pounds r more to the square inch. The amount f bituminous material used per square yard i this application will vary from 1½ gal- ons on a 2-inch course to about 2½ gallons n a 3-inch surface. Great care must be ad in the distribution of the bitumen to revent getting too much or too little ma- erial in spots or streaks, otherwise bunches" or depressions, as the fault may ause, will soon develop.

After spreading the bitumen, it should be ightly but completely covered with pea stone (½-inch stone) and thoroly rolled, using a 15-ton roller if available and if the stone is of hard quality, or a somewhat lighter roller if the stone is of a poorer quality. Success will not be obtained if this course is not thoroly rolled.

A seal coat of the same quality of bitu- men is then applied, using ½-gallon of bitumen to the square yard for this applica- tion, then covering again with pea stone and finishing with the heavy roller.

When the bitumen is applied, the stone should not be wet but may be moist, and in all cases must be absolutely clean and free from dust. The bitumen used may be an asphalt or tar product; and as this paper is somewhat limited, the details of specifica- tions for this material are necessarily omitted.

Whether of asphalt or tar, the bitumen should be properly refined and prepared for use in this type of construction, its proper- ties varying slightly with the climatic con- ditions of the territory in which it is to be used.

In northern climates like that in the New England States and lower Canada, the best and most lasting results appear to be ob- tained by using an asphalt having a pene- tration of 90 to 110, as determined by the standard method of testing adopted by the American Society for Testing Materials.

The United States Department of Agriculture has published a bulletin (No. 691, available for distribution) giving specifications somewhat in detail for bituminous materials of different kinds and for different uses. Reference is here made to that pamphlet for more details, but the writer believes from experience and observation that for penetration work in northern climates the asphaltic material should be a little heavier than that suggested in said specifications.

Where properly built under suitable climatic and traffic conditions, the bituminous macadam pavement is economical both in construction and maintenance. If a hole appears in the surface it should immediately be patched, using a mixture of small stones and hot asphalt or tar. If a general breaking of the top surface appears imminent, it should be given a seal coat of hot asphalt and pea stone before such breaking up occurs.

A Set of Rules

A few condensed rules are here given for the prevention of unsatisfactory results with bituminous macadam:

Be sure that the drainage, subgrade and foundations are suitable.

Have the surface of the bottom course even and without depressions before laying the top course.

Have the larger sizes of broken stone predominate in the top course.

Use dumping platforms or self-spreading wagons for spreading all broken stone.

Use a sufficiently hard bitumen for both penetration and seal coat, as a soft material permits the surface to soon become wavy.

Get all penetration work complete during the spring and summer months. If done in the late fall, the penetration is not complete and the pavement is liable to become loose in the following winter.

Patch holes immediately if they appear in the surface.

If tar is used, apply a light seal coat at intervals of two or three years.

Acknowledgment.—From a paper presented at the Canadian Good Roads Association Congress, Quebec, May 20-22, 1919.

The Townsend Bill Reintroduced in Congress

Excellent judgment has been shown by Senator Townsend, Chairman of the Post Office and Post Roads Committee in the national highway bill reintroduced in Congress early in June, to meet the difficulties confronting the enterprise in the eastern and far western states respectively. It has been contended that some of the eastern states have already substantially progressed toward building their main highways and that a national measure should recognize and reward this effort. It is also pointed out that in most of the far western states the Federal Government is a very heavy landowner, holding in some ten of the states more than 50 per cent of the area, and that this condition should entitle those states to a greater relative degree of consideration than would be given the states where the Federal holdings are small.

Every mile of highway on the national system constructed by the states of a standard deemed sufficient by the Federal Highway Commission will be incorporated in the national system and an equivalent mileage of state highway constructed by the Federal Government by way of recompense. In the states where Uncle Sam is a great landowner the mileage of the national highway system will be increased according to the Federal domain.

A connected highway system of national importance limited to not less than two per cent nor more than four per cent of the highways thruout the nation is the object clearly set forth in the bill. Its method of accomplishment is thru the medium of a Federal Highway Commission with well-defined responsibilities. Equally definite is the provision that the system, because of its national importance, shall be paid for out of the Federal Treasury, and to this end an appropriation of $425,000,000 available over a five-year period is provided.

While the Federal agency is given power and made responsible for surveys, construction, repair and maintenance, a provision of the bill enables the Commission to utilize the facilities of the state highway departments for this work on a practical basis of coöperation.

Another wise provision of the act is to meet conditions in those states which have large sums from bond issues available for immediate expenditure. In such cases the Commission may arrange it with the state to go ahead and build its part of the national system and be reimbursed out of the Federal appropriation.

The administration of the Federal Aid Road Act is transferred from the Secretary of Agriculture to the Federal Highway Commission, but all possibility of conflict with state laws is removed by requiring that the Secretary of Agriculture shall coöperate with the Commission whenever it is necessary to meet the wording of state statutes.

David Jameson, President, American Automobile Association.

Publicity Methods for Road Bond Campaigns

The Story of an Intensive Three-Weeks Campaign in Rock County, Wis., for a 100-Mile System of Concrete Roads

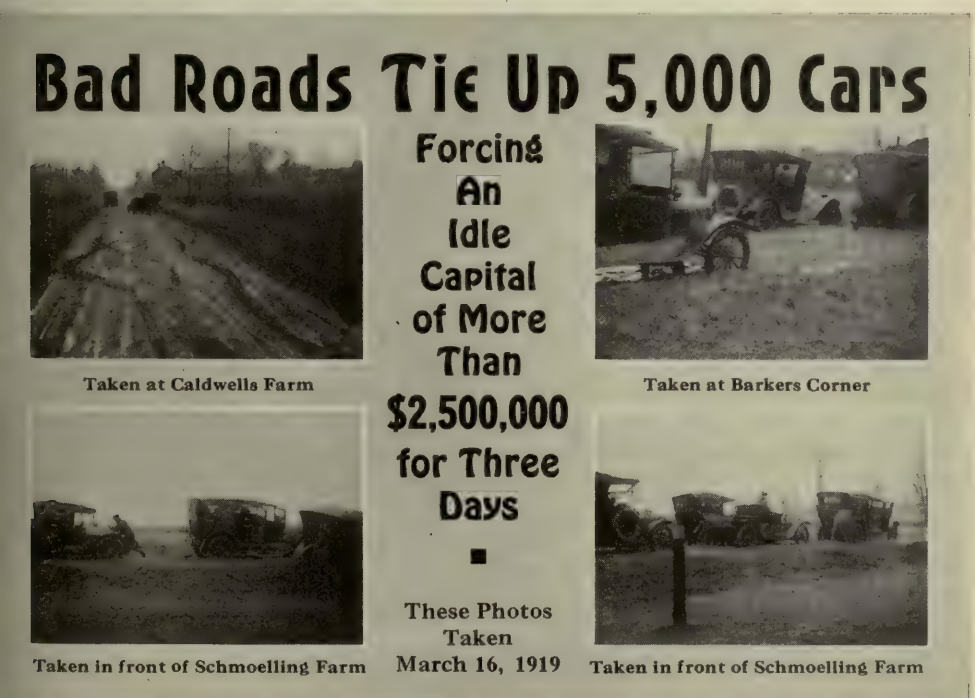
By James W. Brooks

ROCK County, Wis., on April 1, 1919, by a vote of 3 to 1, set its seal of approval upon a bond issue of $1,500,000 to build a hundred-mile system of concrete roads. Back of this statement lies an experience in the conduct of a hard-roads campaign that may be of value to other counties in their efforts to get out of the mud and stay out.

The campaign was short, sharp and conclusive. It was condensed into three weeks. Publicity was concentrated upon the economy of concrete in maintenance as against gravel or macadam. At the outset a financial statement was presented, the gist of which was that even if no saving whatever was made, the cost of concrete roads would not exceed 76 cents per $1,000 assessed valuation. From this point on, argument centered upon the saving that would undoubtedly follow the elimination of excessive repairs on road and vehicles, as well as upon the added advantage of having roads that would afford the uninterrupted use all the year round of capital invested in motor trucks and automobiles. That the campaign was successful is shown by the fact that out of 9,880 ballots cast, 7,367 were for concrete roads.

An Association Organized

Prior to launching the campaign, the Rock County Good Roads Association was organized as the official body thru which to collect, prepare and disseminate facts in favor of new roads. George Woodruff, member of the County Board of Supervisors, was chosen president, Charles E.



NEWS POSTER DISPLAYED ON JANESVILLE (WIS.) *GAZETTE* BULLETIN BOARD DURING GOOD ROADS CAMPAIGN

Moore, County Highway Commissioner, secretary, and James A. Drummond, head of the automobile interests of the county, was made treasurer. Thomas G. Murphy, of the *Janesville Gazette*, took charge of publicity work.

The reason for creating a special organization was that, since the farmer vote was essential, it would be best to approach that vote thru an organization which the farmers controlled among themselves, rather than to make the approach thru commercial clubs or automobile associations, and lay the proposition open to the charge that it was primarily a movement for the commercial interests and automobile owners. These interests, however, particularly the Janesville Chamber of Commerce, under the leadership of Frank J. Green, secretary, rendered invaluable aid in providing the necessary funds for the campaign, and played their roles in a splendid spirit of cooperation.

Financing the Campaign

The first step following the formation of an official campaign body was the matter of finance. Budgets were prepared for postage, printing, advertising and other items incidental to the work, at a total estimated cost of $5,000. The organization then resolved itself into two main divisions —educational and financial.

George Woodruff, aided by Michael Ehrlinger, both of whom are closely identified with farming interests, were in charge at headquarters in Janesville, the county seat.

Owing to his intimate knowledge of road conditions as county highway commissioner, Mr. Moore took the lead in field work, conferring with supporters of the movement at different points in the county and addressing groups of farmers and township and village board meetings. Mr. Drummond, as treasurer, directed the gathering of funds to support the educational branch of the work.

Publicity

The problem of effective publicity at minimum cost was solved in a very simple manner. A survey was made of the main objectives to be reached. This survey brought out three lines of approach to success:

1. Motor vehicle owners as a body
2. The farming population
3. The wage-earner in town

It was taken for granted that the busin element in the towns thruout the cou would support the issue, therefore it w decided to cut down publicity costs and concentrate upon the three lines of proach named.

Having established the range, so to spe the next step was to fit the ammunition, printed matter, to the object of atta Accordingly, what might be termed a p licity specification was drawn up as follo

1. *a.* Broadside to automobile owners, fol down to post-card size, including wind-shield sticker, "Vote for C crete Roads," and a return ca stamped on which was a request automobile owners to give names a addresses of neighbors upon wh they could count for support
   b. Personal letter to each automobile ow answering the broadside, enclos leaflets for distribution
   c. Newspaper story on how return ca were coming in, comments there and finally a printed list of nam headed, "Among those who have sponded are the following:"
   (The personal letter of acknowle ment, together with the newspa story, increased the interest and tivity of each automobile owner.)
2. Circular letter to farmers, with leaflet st ing financial facts and the urgent need a change in type of road
3. Newspaper publicity
   a. Editorial
   b. Straight news about the campaign
   c. News feature and signed articles
   d. Six-Day Educational Series of prin talks by chairman of County Boa of Supervisors
   e. Display advertising

To the automobile owner, the argume used were: reduced gasoline expense, l sened tire cost and car up-keep, and all-t year-round use of his car.

To the farmer, the appeal was presen in a unique form. First, the chairman the County Board of Supervisors, Geo W. Hull, a large farm operator and a v busy man (especially as crop season w just opening up), was asked to act spokesman among the farmers and to co duct in the county newspapers a sort round-table discussion of the propositi from the farmers' viewpoint.

Accordingly, announcement was ma that Mr. Hull would begin on the followi Monday a series of printed talks to his f low farmers under the title, "The Ro Ahead for Rock County Folks." The

inted talks were prepared in easy, friendly nversational style, with the utmost re- ect for the feelings of those who might ffer in their opinions, and were published nultaneously each day in the leading ilies thruout the county. The talks began ith a clear statement of the proposition. t the conclusion of each day thereafter, e subject to be covered the day following as given. In this Six-Day Educational eries, the subjects handled were: "Finan- al Facts About the Bond Issue"; "How armers Located Off the Main Roads Will rofit"; "The Durability and Economy of oncrete as a Road Surface Material"; nvesting in Permanent Roads as a Means Getting Capital Back for Reinvestment Other Roads in the County"; and "Signs head on Rock County Roads." At the nclusion of the series, the road in all of its odern aspects as a common carrier was early understood, and the farmers were ady to vote. The interests of the so- lled joy-rider were banished from their inds, and their own interests as affected waste in road repairs, for which they had pay whether they owned cars or not, were permost.

To the man in town, "A Last Word" was sued in the form of a full-page advertise- ent in the leading dailies in the county, tting forth, step by step, how permanent ads would take the mud tax off from his ble supplies and keep it off.

In addition to the method of approach to e public as thus outlined, weather condi- tions were seized upon as a means of im- pressing the public with the losses that re- sult from bad roads. During the campaign a heavy rain put more than 5,000 automo- biles out of commission for three days, causing a capital of more than 2½ million dollars invested in automobiles and motor trucks to lie idle. This brought out in a most effective manner the waste entailed by bad roads. H. V. Ross, managing editor of the *Janesville Gazette,* played up this fea- ture strongly, both in his paper and in news bulletins in front of the newspaper office. A photograph of the news bulletin accom- panies this article. Mr. Ross also con- tributed the slogan, "Ride on Concrete," which soon went across the county. He ran this slogan between the items in his paper, with some highly amusing results. A few slugs carrying the line got into the funeral column, and later a clipping came to his desk from West Virginia reciting the ex- periences of a party of sorrowing friends in being forced to extricate the hearse from the mud. The news article closed with the penciled admonition to "Ride on Concrete."

The campaign ended on the night of March 31. On the following day the county went over the top by a majority of 4,854 in its decision to get out of the mud, and the cost of the campaign was approx- imately $2,500, instead of $5,000. Three days later the first request for Rock Coun- ty's road bond campaign specifications was received, from Marshall, Tex.

Concealed Joints in Concrete Pavement

After the paving roller had been devel- oped by Captain J. J. Gaillard when he was ity Engineer of Macon, Ga., it became pparent that its effectiveness as a finish- ng device was somewhat jeopardized by oint filler which protruded above the sur- ace when finishing at joints; therefore a lan was developed for concealing the oint material immediately below the pave- ent surface, thus preventing the filler rom being an obstacle to finishing.

Concealed joint material used in Macon concrete street paving was ⅛-inch thick, and specifications called for placing it within 1/16-inch of the finished surface. Within a comparatively short time after the pavement was finished, a fine crack ap- peared above the joint. This was imme- diately swept out and painted with tar, heated to 250 degrees. Care was taken that the painted strip should not be more than 1 inch wide, thus preventing joint lo- cations in the pavement from being un- sightly.

Grading With Tractors and Heavy Blade Graders

A Combination That Proved Most Satisfactory in Wisconsin County Road Work

THE heavy blade grader work which was done during the last year in Wisconsin has somewhat revolutionized methods of road grading. F. F. Mengel, Division Engineer of the Wisconsin Highway Commission, discussed this work at the last Road School of the Commission.

The work was done chiefly with a 10-foot blade grader, hauled by a 30-horse-power tractor, followed up with a small crew of wheel scrapers. It was found that about 60 per cent of the roads to be improved under the State Aid Law could be graded with an outfit of this kind, making small cuts and the necessary fills, producing a satisfactory road, and lowering the cost of grading from 30 to 50 per cent.

Where heavy grader work was to be done, the entire job was staked out in advance, or at least staked out from one-half to one mile ahead of the crew, depending upon the turning places. If a survey had been made, it was easy to set the center line of the stakes by measuring the proper distance from the survey stakes. If no survey had been made, and it was impossible to get an engineer with a transit, the center line was determined by setting a long pole at the top of the hill or at the bend of the road where the ends of the tangent were, then lining in the shorter stakes between the ends of the tangent. These stakes were set from one to five hundred feet apart, as circumstances warranted. In all cases, the stakes on the ditch line should not be over one hundred feet apart. The ditch line should be staked out by measuring out the proper distance from the center line stakes.

Where considerable clearing and grubbing has been done on the sides to widen out the road, and the ground is left in an uneven condition, it is necessary to plow a furrow at the ditch line, following the stakes that have been set. It is absolutely necessary that this furrow be straight, in order to get a clean-cut job. Where the ground is very uneven, it is advisable to have a man lead the team while plowing the furrow. Where the ground is fairly even, it is not necessary to plow; a good grader operator



THE TRACTOR AND GRADER ARE INDISPENSABLE ON SECONDARY ROADS, FOR THEY DO THE GREATER PART OF THE WORK



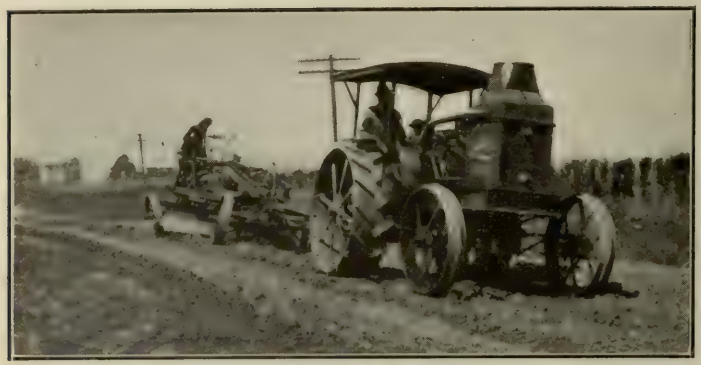
THIS TRACTOR AND GRADER OUTFIT PERFORMED GOOD SERVICE IN BELTRAMI COUNTY, MINN.

One-half mile of road 30 feet wide was graded in 3 hours and 10 minutes, the tractor using 22½ gallons of gasoline

an cut a straight ditch line by using the takes as a guide. In making the first cut, he grader blade should be set so that the grader will cut like a plow, keeping the heel of the blade about as high as it can be set. The final appearance of the road and its ost depend upon the grader operator. The est man that can be obtained is none too ood. He should have a good eye and be amiliar not only with the operation of the rader, but also with the engine. Most operators try to do too much, especially with the first cut. The most successful operators take a light first cut, keeping the heel of the blade rather high. In other words, they shave off the sod, cutting it as thin as possible. When the first cut is carried to the shoulders in this manner, what sod has not been lost in stump holes and uneven places in the road is ground and mixed with earth by the combined action of the grader and the tractor. A good



A 40-65 REEVES TRACTOR STARTING THE REGRADING OF A ROAD WITH A HEAVY GRADER



A RUMELY OIL-PULL TRACTOR HAULING A HEAVY GRADER ON ROAD WORK

operator not only watches the ground ahead and shifts his blade accordingly, but also watches the engine so as not to overload it. This factor is somewhat obviated where a large-sized tractor is used.

Mr. Mengel believes that much time is lost when anything less than a 30-horse-power tractor is used: time is lost in pulling out of bad places, the operator is unable to cut off the high points while taking the regular cut, and a tractor will last much longer if it is run at 75 per cent capacity, using the reserve power for emergencies. The 10-foot blade grader will work very well with the above-described tractor. It is not too light nor too heavy. It has a long wheel base and will move a large amount of earth if properly handled. The best time to make the necessary cuts and fills is after the second or third round has been completed and the loose dirt and sod have been removed to the shoulders. Wheel scrapers, or fresnos, can be used to move the loose dirt to make the necessary fills, and help true up the cross-section. Three to five teams can be used to advantage to do this work; the amount of work they will do is surprising.

The tractor and grader are, of course, always on the move, and when eight to fourteen round trips have been made with three to five teams working all the time, a very satisfactory road-bed is secured at a minimum cost. The tractor outfit moves a little faster than one mile per hour. Under good working conditions, if the outfit does not have to stop for repairs, a crew of this kind will grade a mile in three days.

The Wisconsin Highway Commission has found that light soils can be graded with a heavy grader and tractor to advantage wherever there is any vegetation growing at the side of the road, and some humus in the soil. In work on soils of this character, it has been found best to start the first cut just outside of the shoulder and bring the good dirt to the center, making the next cuts farther out toward the ditch line, and finally out to the ditch line. The cut at the ditch line should never be more than three or four inches deeper than the good soil. In this way all of the good dirt on the road is brought to the center of the road, the crown of the road being nearly flat. The combined rolling and mixing action of the tractor and grader, mixing all of the dirt and packing it down, makes a very good road after a few rains, if the road is reshaped and dragged when it is fairly wet. In this manner it is possible to get a satisfactory surface on many sandy roads which if graded under the old system would have to be covered with macadam.

The plans should always be carefully consulted to find out which way to move the dirt where a fill is in question. In many cases material has been hauled a longer distance than necessary thru failure to consult plans.

Finally, in order to get a good clean-cut grading job, it is absolutely necessary to have the right kind of outfit, and men in charge who take pride in their work and will pay careful attention to the minor details.

Adaptable Motor Equipment for Road Maintenance

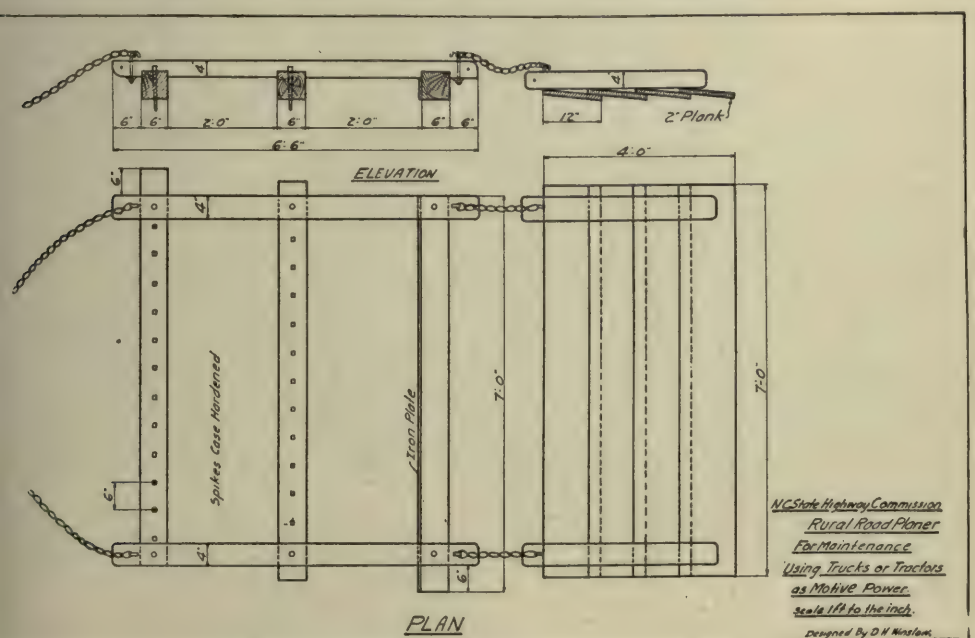
A Truck with Interchangeable Wheels Saved Purchasing Extra Road Machinery, and a New Road Drag is a Great Aid

THE patrol system of maintenance is used thruout practically all the highways under the charge of the South rolina Highway Department. During the t year every one of the ten districts into ich the state has been divided has needed automobile for the use of the district intenance supervisor. A single district vers from six to fourteen counties, and asmuch as a supervisor has general conl over the patrolmen in his district, it is cessary that he cover a large territory. account of the high prices of machines, or and material, it was found that trolmen needed extra help to cover their rk, which consists of dragging, removing bris from the right of way, repairing ains, cutting brush to give a clear view intersections, and generally maintaining lverts and bridges.

In order to give all possible assistance to e patrolmen, the state has devised and t into operation a combination motor ck and tractor which it has found very luable. Light trucks with interchangeable wheels are used. Those in service at present have a truck body and a closed cab for the driver. When traveling around the country, the special tractor wheels are carried in the truck body, which also transports such equipment as is needed and the men who are to do the work.

Extra heavy springs have been placed over the rear axle, so that a heavy load can be carried in the truck. The time consumed in changing the regular truck wheels, with their pneumatic tires, to the tractor wheels is generally about fifteen minutes.

Prior to the use of this truck, it was necessary at times to move labor fifteen to twenty miles by mule teams, and then board the men on the site of the work. Now, by the use of the trucks, the men can be taken to their homes at night, which is a distinct advantage. The closed cab for the operator makes it possible for him to work under adverse weather conditions without any undue discomfort. This is particularly true in hot weather, when it used to be necessary to abandon work because of the teams.



A special hitch is employed when the truck is used as a tractor for hauling plows and graders or road machines. This enables the truck to remain in the middle of the road and insures better traction. The tractor saves the hire of from six to eight mules, and can do with two men the work that previously required four.

A new and very ingenious road planer is being tried out at present. It is a combination of a harrow, a drag and a packer, and is made in two sections, connected by chains. It is about seven feet wide; the forward parts of the machine have case-hardened spikes, which loosen any high spots in the road. The middle portion has an iron plate attached which cuts and spreads the material loosened by the spikes, while the rear portion packs the material.

This machine has worked with great success on earth, sand-clay, top soil, gravel, and on slightly worn macadam roads. The tractors have no difficulty in pulling it up almost any grade. Since it is very light, it can be pulled with teams, if necessary, but it is designed especially for use with tractors or trucks.

This device was designed and placed in operation by the State Highway Commission, of which W. H. Fallis is the State Highway Engineer and D. H. Winslow is Maintenance Engineer.

For Permanent Highways

Lowndes County, Ga., last year spent between $40,000 and $50,000 on public roads. The most of it was a contribution to the sand-swapping process which has gone on under the good roads idea for several years. We admit that it was better work than was formerly done. It is a movement in the right direction. Many of the roads were straightened and graded, the wet places filled in and the sand beds buried. The roads we have now would have filled our hearts with joy twenty-five years ago, when a trip from Valdosta to Hahira was about a Sabbath day's journey. A man who lived twenty-five miles away had to bring his camping outfit with him and return home about the third day after leaving.

But that was in the long ago. It was before the advent of the automobile, the motor plow and the farm truck. It was in an age when time did not count for much. The wear and tear of vehicles and horses were not figured in the expenses of the farm. The increased value of land as a result of good roads was no incentive, as most landowners wanted to buy more land and let it remain in idleness or only partially cultivated. Everything was different then from what it is now. The sandy trails thru the woods were the only roads we had or thought about. To make them clear of roots and stumps was our idea of good roads. We have progressed since then. We have been climbing upward all the time. First, it was the "potato ridge roads" that followed the "burial of sandbeds." Then came the sand-clay roads, and later the graded, straightened, 30-foot highways, which do good service when the weather remains good and the roads are worked.

But these roads are only a beginning. They are just good enough to make us want permanent roads—roads that will stand all sorts of weather and which will not be in need of constant repair. Such roads will cost money, but no more than we are wasting every year on roads that are not permanent. The $46,000 we spend annually on sand-clay roads would pay the interest on more than a million dollars' worth of bonds for permanent work. Or, if we had started putting $25,000 a year into permanent roads ten years ago, we would have had $250,000 worth of paved roads by now. We would have had the nucleus of a system of public highways that would have made Lowndes County one of the greatest counties in the state.

It is time that we were spending our money on roads that the first shower will not make impassable. A million dollars in bonds would bring many millions of increase in values to this county. It would put the cost of roads upon posterity, which is to enjoy the advantage of such an expenditure. It would cut down the amount of time lost jogging along the washed-out roads and would also save an untold amount of loss from wear and tear on vehicles of every kind. It would enable the farmer to get to market quicker and carry much larger loads on his wagon. It would help all the communities of the county, adding to the value of property and increasing the desirability of rural homes. It would impose no burden upon anybody. We should never know that there was a bonded indebtedness hanging over the county. We are hopeful that Lowndes will become interested in permanent roads and that the people will not rest until they get them.

From the Savannah, Ga., *Morning News*.

The Bonus Form of Contract in County Highway Work

By Walter J. Driscoll
Assistant County Highway Commissioner, Outagamie County, Wis.



THE construction program of Outagamie County, Wisconsin, during the last two years called for the completion of twenty miles of concrete highway yearly. With the exception of a very few cases in which the county used day force crews in concrete culvert construction a year ahead of the contemplated paving work, all the work was done by contractors. Until recently all road contracts were awarded in the usual manner, by advertising for bids and subsequently awarding the contract to the lowest bidder.

While the results secured in contracts of this type have been in the main satisfactory, a few inexperienced contractors have bid unnecessarily low and caused great inconvenience and delay in construction thru failure to complete the contract. These results have led us to the conclusion that some way must be found by which it will



THE TRIALS SHOWN IN THE LOWER PICTURE LED TO THE GOOD ROAD SHOWN ABOVE, IN OUTAGAMIE COUNTY, WIS.

be possible for the highway commissioners to exercise a choice in the selection of contractors who are to handle future road work.

A new form of contract was drawn up for the construction of the Seymour-South concrete highway, with one of the best and most reliable contractors in the vicinity. The county agrees to furnish all the machinery and equipment, while the contractor is to give his personal supervision of the work for a fixed sum per mile. The labor is to be hired and paid for by the contractor, but twice monthly he is to be reimbursed by the county for all money expended by him for labor. The county's daily inspector will act as timekeeper of the labor employed by the contractor, and will render daily reports to the office of the county highway commissioners.

Part of the agreement in the contract is a preliminary estimate prepared by the County Highway Commissioner as to the labor cost of the contract. Based on this estimate of the labor cost per mile, the contractor receives a bonus for any saving made by his keeping the total labor per mile cost below the estimate. Likewise, he assumes a portion of the additional cost to the county in case the expenses for labor exceed the estimate. A sliding scale of percentage covering both penalty and bonus clause has been arranged, the aim being to increase the percentage of bonus offered based on the amount saved. The scale of percentages covering the penalty also increases in the same proportion as the additional cost to the county over and above the estimate. The county highway commissioner has the right to set the maximum wage that the contractor may pay for labor and teams, and still further reserves the right to discharge any or all workmen whom the contractor may have employed but who prove unfit or incompetent.

The contractor thru this form of contract is assured of a conservative definite profit per mile, with a possible change of reward if he executes his work systematically and economically. The county, on the other hand, is amply protected, and should profit by the construction of this road at a minimum cost.

A West Virginia Highway Link Built By Convicts

By P. J. Walsh

Engineer and General Superintendent, Kanawha County Road Department, West Virginia

LAST year about five miles of the Midland Trail, which crosses the southern half of West Virginia, was built near Charleston, under the jurisdiction of the Kanawha County Road Department. The road is a 14-foot concrete pavement and was constructed entirely by convict labor. This road crew worked very efficiently and kept two mixers in service practically all of the time with only a moderate amount of instruction. They seemed to have a peculiar aptitude and keen liking for this kind of work.

By dividing a force of seventy convicts into two mixer crews, a spirit of friendly rivalry was created which developed an incentive for speed in construction. As a further inducement to increase the efficiency of the gang, a bonus system was worked out whereby the men on the mixer crews were allowed a daily reward of one half-cent per foot for every lineal foot of pavement completed by each gang in excess of 250 feet per day. After two weeks' instruction, each crew averaged well over 350 lineal feet of completed pavement in nine hours.

The convicts were hired from the state on the basis of a yearly contract authorized by law. The state charges the county at the rate of 75 cents per day for each man, 25 cents of which is placed to the man's credit. Clothing, housing, food and medical attention are furnished by the county. Comfortable living quarters were provided in a group of farm buildings near-by, as shown in one of the accompanying illustrations. The camp commissary was so well managed that fresh pork was supplied to the men from camp-fed hogs. Necessary



ONCRETE ROAD CONSTRUCTION IN KANAWHA COUNTY, W. VA., BY CONVICTS, USING ROLLER AND BELT FINISHINGS

el was furnished by convict miners work- g at a coal mine located on the camp ounds, and a substantial quantity of fresh getables was supplied from the camp's n gardens.

Almost immediately after the men were t out on road work, they showed their eat preference for these conditions by the thusiasm with which they carried on the or. No armed guards were used, the n were not clothed in stripes, and chains re banished. This camp held the record an honor camp and was one of the larg- and best-managed in the state.

Standard specifications were maintained all this road construction. The concrete was proportioned 1:1½:3, using Ohio River sand and pebbles with a little coarse aggregate of crushed limestone. The pavement is 14 feet wide, 7 inches thick at the sides, and 9 inches at the center. The roller and belt method of finishing was used, as shown in the illustration.

The completion of this stretch of road affords an excellent highway between Charleston and Belle, W. Va. Furthermore, it makes a strong link in the chain of permanent highways which the West Virginia State Highway Department and the county highway departments are building up each year.



CAMP FOR CONVICT ROAD BUILDERS IN WEST VIRGINIA

When, Where and How to Drag

With Text from Missouri and Illustrations from Wisconsin

LESS than 12 per cent of the rural public roads in the United States are surfaced. The remaining 88 per cent are dirt roads and require constant attention to maintain them in a passable condition. When properly graded, these roads can best be maintained by using road drags. Here are some simple rules from Missouri for the proper dragging of earth roads.

1. *Drag at the right time.* The right time to drag a road is as soon as possible after every rain, when the soil is mellow and pulverizes readily. Do not drag when the soil sticks to the drag and do not wait until the soil is too dry before you drag.

2. *Drag early in the spring* as soon as the frost is out of the ground. Dragging a muddy stretch of road will aid in drying it out, since the wind and sun will have freer access to the thin layer of saturated soil which the drag spreads out over the surface of the road.

3. *Drag before it freezes.* A road dragged before it freezes in the fall will freeze smooth and usually remain in this condition for some time. The general condition of the road in the spring after winter dragging will be remarkably good.

4. *Drag a gravel road when wet.* A gravel road should be dragged, as a rule, soon after a rain, when the soil is wet but not too saturated. It will be found that the gravel can be worked better when in a wet condition.

5. *Drag between shoulders.* When a road is badly cut up over the entire surface, two complete round trips should be made with the drag. The first trip should be made along the edge of the shoulder. The second trip should be made inside and slightly overlapping the first. This will take up any excess material left by the first round and will aid in building up the crown.

6. *Ride the drag.* Under ordinary conditions the driver should ride his drag. He will soon be able to adjust his position so as to produce the desired effect. By standing on the forward edge, the drag may be made to cut deeper, and vice versa. A long hitch causes a downward pull and thus increases the depth of the cut, while a short hitch tends to lift up on the front blade and decrease the depth of the cut.

7. *Carry pick and shovel.* The driver should always carry a pick and shovel on his drag. He will find these very useful in opening watercourses, filling mud-holes and chuck-holes, repairing washed places and digging up rocks.

8. *Drag often.* Do not try to build a road with the drag. Its use is to maintain the surface of the road, which is already constructed in a smooth condition. The best results are obtained by repeated dragging.

9. *Use of a light drag.* One mistake made in building a drag is to use in the construction of the blades timbers which have too wide a face. A drag made in this fashion will pass over the irregularities in the road instead of smoothing them out.

10. *Successful road dragging requires experience.* Dragging a road is a business that is best learned in the school of practical experience. Every man engaged in dragging must become an enthusiastic and observant student of the road to be dragged if he desires to produce results.

A word of warning should be added, that in many cases it is entirely impracticable to drag earth roads immediately after rain. Sometimes it may be necessary to wait until several consecutive clear days have elapsed after a long rainy spell before the road is sufficiently dried out to keep ruts from forming almost as rapidly as they can be filled by dragging. Well-constructed sand-clay and top-soil roads should not often become muddy after they are once well compacted. They may become seriously rutted, however, under heavy traffic during rainy weather, and are almost sure to need dragging several times each year.

A Demonstration of the Value of Dragging







The above views illustrate the process of road improvement by maintenance. The views were taken on a state highway west of Baraboo, Wis. The soil is a heavy clay, rather poorly drained, and carries heavy traffic for an earth road. The top view was taken at 9 A. M., following a heavy rain. The rough and rutted condition of the road is clearly seen, on the left of the view. The patrolman had made one trip one way on the center of the road. The second view shows the condition of the road fifteen minutes later, following a return trip by the patrolman. The bottom view shows the same road one hour later, after the patrolman had completed the second trip with the planer.—Courtesy of *Good Roads for Wisconsin.*

The Same Spot—Drainage Made the Change



MUD—THE ELEMENT WHICH RETARDS CIVILIZATION. MANY STATES, COUNTIES AND TOWNS ARE JUST RISING ABOVE THIS RETARDING ELEMENT AND ARE BUILDING AND MAINTAINING THEIR ROADS FOR YEAR-ROUND SERVICE



EASY TRAVEL OVER COUNTRY ROADS MEANS LOWER HAULING CHARGES AND LOWER PRICES

County Health and Welfare Activities Depend Upon Good Roads

Remarkable Interrelation Shown by Federal Study of a Montana County

NO stronger appeal for the development of good roads could be made than that set forth in a pamphlet just issued by the Children's Bureau of the Department of Labor. It is entitled "Maternity Care and the Welfare of Young Children in a Homesteading County in Montana."*

The Montana survey is the fourth of a series, the others having been made in typical districts in North Carolina, Wisconsin, and Kansas. The Montana survey, made in the summer and autumn of 1917, covered the western half of a newly settled county in the eastern part of the state, an area of approximately 5,500 square miles—somewhat larger than that of the state of Connecticut. The greater part of this district is from 70 to 100 miles from the railroad. A visit was made to every mother in the area who had had a child during the five years preceding the study and whose child was born within the district. All told, there were 453, and it was estimated that perhaps ten or twelve might have been missed. The work included also a series of Children's Health Conferences which were the joint activities of the Children's Bureau, the State Board of Health and the local neighborhood.

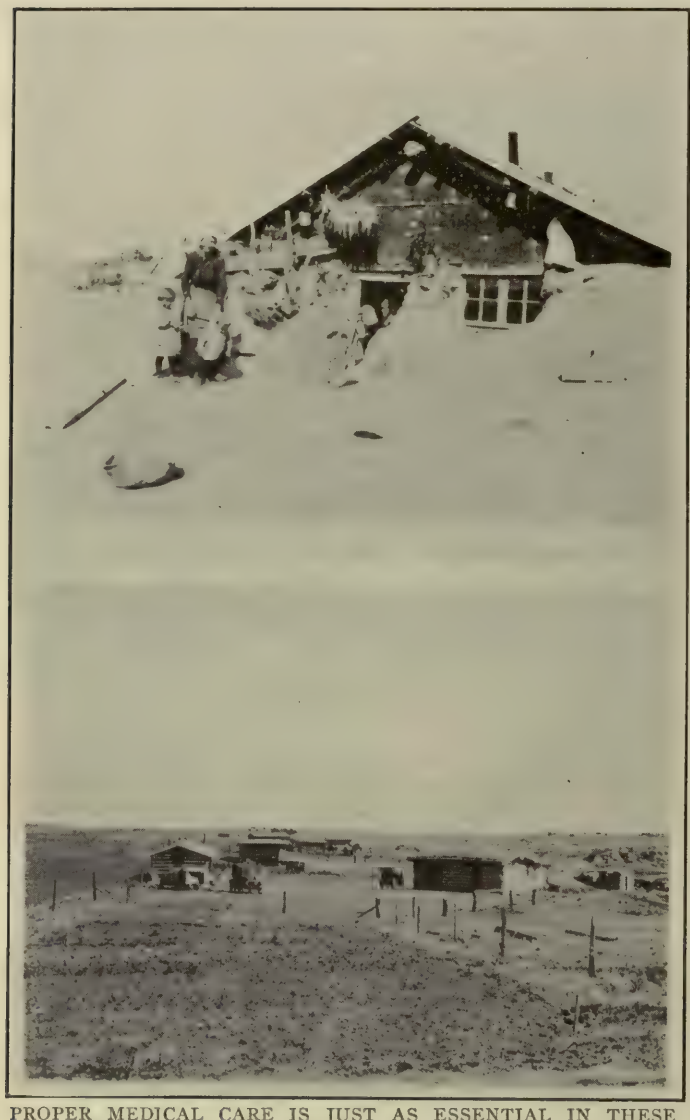
Montana and Its People

In the following discussion it must be remembered that Montana is a young and largely rural state which was practically uninhabited until 1860 and which was admitted to the Union only in 1889. Credit must be given to the state for its many progressive legislative accomplishments. Its active State Board of Health, the fact that it was among the first states to create a Child Welfare Division in the State Board of Health and to encourage rural public health nursing by a law which permits county and rural districts to employ public health nurses, its model birth registration law, even tho not yet everywhere enforced, these must be placed on the credit side of the ledger. The conditions revealed are not due to the lack of law or of power, but rather to the immensity of the task and to the fact that the state government is yet only 30 years old and that in an area larger than the state of Connecticut there are, according to the 1910 census, less than 13,000 persons, with an average of more than one square mile for each dwelling. The 1910 population figures were for the entire county, while the area covered by the report is about one-half of that—the less thickly populated half of the county.

The homesteaders in the district have come from all parts of the United States and are mostly Americans of native parentage. In many instances they are the children of parents who homesteaded in the Middle West and in the southern states. A few Russian German neighborhoods form the only considerable foreign element in the area studied. Thirty, or 6½ per cent of the mothers visited, were of Russian-German birth; 367 mothers, or about 8 in 10, were American. Illiteracy is only a slight problem, as 95 per cent of all the mothers were literate and 86 per cent of the foreign-born mothers could read and write English.

The country is still very young, altho there are a few families of over 12 or 15 years' residence. The district has been settled for the most part within the last five or six years; 56 per cent of the families visited were still "squatting" or homesteading at the time of the birth of the child or children included in the survey. The country as a whole is practically treeless except in the "breaks," where cottonwood trees abound. It is a country of great, wild, rugged, sweeping plains broken by buttes of many shapes and by sudden gray cut banks, a country of almost inconceivable distances, in which one can drive for hours and see no sign of vegetation and no sign of animal life except an occasional flock of sage hens, or a prairie-dog town, or a coyote. The "breaks" are the irregular, deep, twisting gullies cut by

*Rural Child Welfare Series, No. 3, Bureau of Publications, No. 34.



PROPER MEDICAL CARE IS JUST AS ESSENTIAL IN THESE MONTANA DUGOUTS AND SHACKS AS IN A FIFTH AVENUE MANSION

the many creeks and streams on their way to the rivers.

In such an area, the greater part of which is from 70 to 100 miles from a railroad and where even telephones are lacking, the roads assume an importance far greater than that of the older and more developed eastern counties. There are no hard-surface roads, and until recently, when the county took advantage of the new Federal road bill, very little work had been done on the trail. In this country, work on a road consists of straightening, now and then digging out a hillside and filling in a gulley, installing a culvert, building a wooden bridge over a stream, and grading and surface dragging. This work is confined to the main traveled trails and has not by any means covered all of these. It is impossible to give figures for the total road mileage in the area. The improved mileage is a very small portion of the whole. For the most part the roads are nothing but wagon trails, in some instances following the old buffalo trails to water. As soon as the ruts get so deep that the bodies of vehicles are endangered by the high centers, a new trail is started by the simple process of moving over a little, one new rut being made between the two old ones and the other to the right or left of the old ones. After this process has gone on for some time the ground looks as if it had been plowed, sometimes for a width of 50 feet. Automobiles are becoming fairly common, tho the great majority of people still must depend upon horses. Of 463 families visited in the investigation, 59, or about 1 in 8, owned automobiles. Cars are purchased before other necessities. Sometimes a family of five or six will postpone adding a room to a one- or two-room shack in order to use this money to buy a car, for the latter is a business investment, a health investment, and practically a necessity. One father, in discussing the need of better maternity and infant care, remarked, "First get the county commissioners to put in roads that would make it possible for the doctor to arrive here if

ve did have him within calling distance. n the spring, when the water is high and ve cannot cross the rivers, we are cut off rom the world as effectually as if we were n an island."

Agriculturally this section of the county s undergoing a great change. The County Agriculturist and others believe it should emain for many years—at least until a ailroad is secured—chiefly grazing land, vith corn and other feed grains raised for ome consumption. The large stock-raising enterprises with the "open range" will e further and further crowded out, and attle will continue to be the first product, ut with many small heads owned by the omesteaders instead of great herds owned y a few ranchers. The cattle are for beef, nd there is practically no dairying. As a onsequence, the stores in the little towns report that they sell hundreds of wagon-loads of canned milk. This difficulty is hard for an outsider to understand, but a milch cow cannot be allowed to range with the herd because the cows would milk her and the expense of fencing and of buying feed are such as to make it practically impossible to keep such a cow at all. Fresh milk and dairy products are spoken of as amenities of the future, "when the railroad comes." The four or five villages in the area are not markets in any sense. The live stock is rounded up in the spring and autumn and driven direct to the railroad.

The villages are chiefly distributing centers for food, clothing, etc., brought out from the railroads to be purchased by people living in the country. For the most part the villages are small—often less than a dozen houses and stores altogether, sometimes only four or five buildings. The largest village has a population of from 250 to 300 inhabitants in winter, and the people come into towns from their homesteads to send their children to the town school. Because of the poor character of the road, the hauling from the railroad to the chief inland village costs from $1 to $2 per 100 pounds in summer and from $2 to $5 in winter. Lumber is one of the most expensive items in the country, and in one country store fence posts, which sold for 25 to 35 cents apiece, supplemented silver as a medium of exchange.

Money income means very little in rural areas because the farms contribute largely in produce instead of money to the family living and it is therefore difficult to measure the economic condition of the family.



ABOVE—A DANGEROUS DELAY AT A CRITICAL PERIOD MAY RESULT FROM A PHYSICIAN'S ENCOUNTERING ROADS OF THIS CHARACTER

BELOW—THE WELFARE OF EVERY MEMBER OF THE FAMILY LIVING IN THIS MONTANA FRAME SHACK IS A REASON FOR GOOD ROADS

In cities this is comparatively easy, but on the whole the Federal investigators found that neither the care of the mother at childbirth nor the family living conditions were dependent wholly upon the prosperity of the individual family. The difficulties are problems of the whole community, and all are susceptible in turn to correction by concerted public action, which, besides relieving the present stress, would doubtless stimulate the development of the county.

The Problem of Maternity Care

From the standpoint of health, nothing is more important to a community than that the mothers in it shall have the best possible care during confinement. In this great area of 5,500 square miles there was not one hospital. There were only three registered physicians and two or three others not registered who said they came to the county not to practice but to homestead. These have gone into practice in emergency and when called upon they could not refuse, altho they demurred unless it was a matter of life or death.

More than three-fourths of the 463 mothers visited by the agents of the Children's Bureau had no prenatal care whatever; 22 mothers had care which could be classified as fair; and 86 received only inadequate care. One-third of the mothers had attempted to get information about prenatal care from books or magazines.

More than one-fifth of the mothers left the area for confinement. For the most part they succeeded in getting better care than they could have had at home, but to many in the last months of pregnancy or soon after childbirth the long trip to and from the railroad, often in bad winter weather, was exhausting. Of the 359 who remained, only 129 were attended by a physician. In other words, almost two-thirds of these mothers had to meet the ordeal of childbirth without competent medical care. Forty-six, or more than one in eight, were delivered by their husbands. Three were quite alone.

Very few received after-care by physicians, and nursing care was largely unskilled, tho 14 mothers had trained nurses and 113 had partly-trained nursing care. Many mothers suffered serious complications of pregnancy or confinement and eight died—a very large proportion of losses compared with those of other rural areas. The state of Montana, like the area studied, has a very bad record for maternal losses.

The mothers who went away from home, as well as those who stayed in the area and were attended by physicians, found childbirth very expensive. Of the 219 attended by physicians, only 14 per cent paid less than $25, and for 22 mothers the physician's charges amounted to $50 or more. Many mothers were attended free of charge by relatives or neighbors, and much free nursing service and help with housework was given; yet nearly three-fourths of the 327 mothers reporting total immediate costs of childbirth, that is, the attendant's fees, nursing care, and help with housework—paid more than $25, and 28 mothers paid $100 or over. For mothers who went away for confinement these costs, plus the cost of the trip, board while away from home, etc., were very large. Reports of the aggregate costs were secured for 19 mothers, for whom these aggregate costs, in all but four instances, were $150 or more, and in two instances $700 or more.

Of perhaps 25 or 30 women who in the various neighborhoods had the reputation of caring for confinement cases, 10 were visited by the Children's Bureau agents and questioned about their work. Few had attended more than 2 cases in the past year, tho 1 reported 22 cases in the past five years, of which 2 had been attended by a physician also; and 1 reported 5, 1, "about 6;" and 1, 7 in the past year. Several had had some training in a hospital or as practical nurses before they moved into the area studied. One was a graduate trained nurse (she had, however, attended confinements without a physician only twice in her three years of residence in the district). Those who had practiced before coming to the area studied had almost never cared for a mother at confinement, except as a nurse where there was a physician in attendance, and they all preferred to work with a physician.

Nearly all of the women interviewed realized the need, if not of complete asepsis, at least of cleanliness in caring for their patients. None of them, however, reported a regular equipment; and tho they usually carried antiseptics, nearly all depended for other supplies on what their patients had in the house.

It is obvious that these women occupy a very different position in their neighborhoods from that of a city midwife, or the midwives of, let us say, a southern rural community. For the most part they realize their limitations, and recognize that maternity care is a great problem in their neighborhood, and they approve of the idea of county public-health nurses as a first step at least toward the solution of the problem.

The Difficulties of Travel Responsible for Health Conditions

These conditions are partly traceable to the lack of good roads and to climatic conditions. Nearly every neighborhood has had a death or a narrow escape from death on account of childbirth. Preference for an untrained attendant was seldom responsible for the lack of medical care. "We had planned to have a physician but the snow was so bad it was impossible to send for him." "We were all packed ready to go to the city for the confinement, but the storms came up and the creek was so high we couldn't get away. There was no bridge." "We were all ready but couldn't get away on time because all the autos in the neighborhood were being used for sheep shearing." In case after case there were recorded the difficulties of travel on account of the roads, the physicians arriving often eight hours late and even sometimes as much as 24 hours late. The "cost" in maternal deaths for 628 live-born infants was 12.7 per 1,000.

Altho the figures on which this death rate is based are small, it may, nevertheless, be worth while to compare it with other available statistics. The corresponding maternal mortality rate for the United States birth-registration area in 1915 was 6.6, a rate only about half as high as that of the Montana area studied. And this rate for the United States birth-registration area is higher than the rate of any one of 15 foreign countries for which the figures for the year 1910 were secured. Of these countries, Scotland has the highest rate, 5.7, and Italy, the lowest rate, 2.4 per 1,000 live births. The Montana district's shockingly high rate of 12.7 is more than five times as high as Italy's.

Is the area studied in Montana exceptionally bad or does the state, and in fact the nation, share the responsibility for the deplorable roads?

In the area studied no advantage has been taken of the excellent law permitting counties to use public funds to employ public-health nurses. Indeed, there were practically no state or county activities which directly touched the welfare of mothers and young children in the area.

Most of the infants and young children impressed the agents making the inquiry as unusually healthy and sturdy. Nevertheless the minimum infant mortality rate of 71 per 1,000 births was nearly twice as high as the rate of 40 for the area studied in Kansas and was 17 per 1,000 higher than the rate of 54 found in the Wisconsin area. Inasmuch as it is now known that many infant deaths can be prevented, the inadequate prenatal and confinement care provided for the mothers in the area takes on an added significance.

The high cost of confinement may be attributed to the factors of distance, the poor roads, the fact that some of the doctors must hire automobiles to get to their patients, and the time they must spend on the way to and from patients when they ride horseback or when a horse or team and wagon is sent for them. Some physicians charge $1 a mile, others 50 cents. The charges for confinement, therefore, seemed to depend chiefly, not on the doctor's services, but on the distance the family lives from the physician. This is a factor which could be largely remedied by the improvement of roads and the erection of bridges, greatly reducing the distance traveled and increasing the speed with which the physician can reach the patient. Such improvements in the roads would also tend to make the practice of calling upon physicians for assistance much more general and would therefore increase their practice and make possible a livelihood for more physicians, but in no recent study conducted by the Federal Government or by any state government has so intimate a relation between public health and good roads been shown.

The Opportunity of the County

An Open Letter to County Officials

By H. S. Gilbertson

TO you we extend both our hearty sympathy and our congratulations. It is rather late in the day, after these decades of neglect, to begin thinking about you. But better late than never. The fact is, you have been sticking to your duties so closely and have been making so little noise that many of us have hardly realized that you were around.

That is just the reason for extending our sympathy: the fact that you are doing an important, most essential public service and are supported to such a meager extent by the force that makes democratic governments, i. e., public opinion. The people of your county know little and, we regret to say, in many instances care less about your work until one of you makes a misstep. For you personally they care, very often a great deal, but that is something quite different from taking a vital interest in what you are trying to do for them. Do they ever even give you any suggestions as to what they would like to have you do for them? We doubt it.

The Duties of County Officials

It is not the fault of the people. Most county governments have a prosy set of duties. To get up a great popular enthusiasm over a change in the filing system in the county clerk's office, or over a new heating system at the county jail, would not be an easy matter. And yet such things are about as near to the people at large as any concern the county has. Once in a while you put in a new road or bridge, and popular interest in one end of the county may be fanned for a little while. Your great difficulty is that, altho you are always performing duties which are extremely important, they are rarely of general concern and never spectacular. By contrast, city officials are always doing things which are not only important but visible—streets, parks, playgrounds, police and fire protection, and the like. If your county happens to have a large city in the middle of it, or to be lost in a great city, as are the counties in Greater New York, so much the worse for you.

But we congratulate you, too, on the fact that there are possibilities before you for making the counties take a greater place in the affections of the people. It will require on your part vision, initiative, and perhaps self-sacrifice. You are part of a system that spreads over the whole United States, with scarcely a break. You are the foundation of the great structure of organized democracy. The state is pretty much the sum of its counties. Of the unofficial organization, that is, the party system, you are a particularly indispensable part. The county is the unit of party organization. What form its policies take depends very largely upon you.

Before the war there was expended by the county governments thruout the United States a sum equal to about one-third of the annual cost of administering the Federal Government.

Over a great portion of the country, counties furnish the only local government. Cities are something rather special and apart, but your unit belongs to us all.

And so you have, to use a common phrase, "some job" before you, if you will but recognize it. In these troublous, uncertain days American democracy is on trial in a sense and in a degree that never was true before. A considerable number of our people who once staked all their hopes on political democracy as a solution for our industrial and social ills have lost faith. Many of them do not want democracy even if they can get it. Their faith must be restored; and no part of the work is more important than what is to be done at the foundation of the structure.

In a word, the "job" must have as its ultimate object the bringing home to the people the fact of the county government's existence as an instrument of community service. You must *humanize* the county. However, such a bald statement probably means little, so let us be more explicit.

First of all, the county will have to be

made fit to serve by changes in its relations to the state, in the scope of its functions and in its internal organization. The human program, logically, would come later.

County Functions That Should Be Unloaded

The setting right of the county government would naturally be based upon the fact that it was never devised for the complex life of modern times. It is a creation of the homespun days when people believed in as little government as possible and acted on that theory. But in spite of all that could be done, the demands made upon all governments have grown apace. As a result, counties are performing—in some cases very badly—functions which are quite beyond their powers, simply because they are local and not general governments.

Much of the institutional work of counties is, and in the nature of things must be, badly done. You simply cannot properly take care of the insane, for instance, because you do not have enough patients to warrant the expense which would be incurred in classifying these unfortunates for the kind of special treatment which they need. And yet the counties of several states have this responsibility. The same is true respecting the care of convicted prisoners. The same is true of the police functions: it does not pay a single county to keep up a force large enough to handle a really serious outbreak of crime within its borders.

These are distinctively the obligations of the general government of the state—to provide general institutions for the afflicted where expert, specialized care can be given, and to supply a mobile police force of some sort (like the constabularies in Pennsylvania and New York) which can be concentrated where it is needed most at any particular time. In the matter of roads, a number of states have relieved the counties by the establishment of state-wide systems, and still more provide expert aid to counties.

And so the first step in adjusting affairs in the county is an unloading of certain functions upon the state. It would seem to be a matter peculiarly within your province to take the initiative in this important matter.

Needless Duplication of Functions

In some cases the unloading of functions should go much further and should take an entirely different form. These are the cases where a city of considerable size dominates the county. There are numerous such instances, including not only the great metropolitan centers, but cities like Schenectady, Dayton, Milwaukee, etc. Why should a county retain its police duties in the sheriff when they can be much better taken care of by the uniformed force of the city? Why should there be, as in California, two sets of tax officials, operating in the same territory and doing identically the same work? Why two jails? Or two sets of engineering services? Indeed, the question which must be asked in many localities is why there should be two local governments at all. The common business sense in such communities cannot penetrate the secret of much of the needless duplication of function which prevails in many localities.

Sooner or later this situation will be remedied. It would be to the honor of the county officials if they would themselves take the lead in pointing out this situation and working out the remedy. In the long run, it would be an act of public service which would stamp the county officials as having the truest welfare of the public seriously at heart. Possibly this is a rather heroic suggestion, but if the abolishment of some counties must come, as we believe to be the case, it might as well come from within the organization.

County Home Rule

Next in order, the county government having unburdened itself of inappropriate duties, would be the principle of self-determination (to use the more modern phrase) or "home rule." You have, no doubt, experienced your full measure of interference by the state legislature in many matters which you could have determined far better for yourselves. Why should you go to Albany, or Madison, or Lansing, to determine whether or not the sheriff's cook should have an increase in his salary?

Counties in California long suffered under this sort of arrangement, due to an old and impossible requirement of the constitution that the Legislature should make laws uniform for all counties. At last it

became so much of a nuisance that there was adopted in the state a home-rule amendment applying to counties in much the same way that the municipal home-rule amendment does to cities. Each county in California may, by the election of a charter commission and the ratification of the charter by the people, determine for itself the form of its county government and confer all essential local powers on local officials. Los Angeles and other counties have taken advantage of this amendment to regulate their own affairs as local needs dictated.

The Need of a Responsible County Head

Having the power of self-determination, the next step is to use it in making county organization measure up to the functions which it may be called upon to perform. Do you realize that county governments are about the only headless institutions on earth? Who is your county executive? Who is the directing genius? You haven't any. Each of you is responsible to the people of your county for the local administering of certain laws of your state. Note this: the general electorate makes the laws, while another (the local one) picks out the men who are to administer them. It is a queer situation, when you come to think it over, that the administrative officers of the county should have no executive superior, and that you supervisors or commissioners should have no single chief agent to whom you can look to represent the administration of county affairs as a whole.

This kind of organization inevitably leads to bad team-work. It is financially bad because there is no one person responsible for watching expenditures. There is no one in the administration whose business it is to think above such special interests as those of the sheriff, the county clerk and the assessors. If for some reason or other it becomes necessary to impose new functions upon the county, there is no one person to make appointments, and sometimes, as a result of this, as in New Jersey, appointing power is given to judges, which is fundamentally wrong.

The Short Ballot for Counties

The fact is that if county governments are to serve the people,—indeed, it may be, if they are to survive at all,—they will have to be made over from within. There is only one good form of organization and that is the responsible kind—responsible citizenship, responsible supervision, responsible administration. The people cannot be responsible if they are compelled to look upon your offices, not as agencies of public service, but as something with a salary attached which should be passed around. In fact, most persons who have studied the question believe that the people are called upon to elect too many county officers. Even where the people know all the candidates, which is probably the case in rural districts, every elective office (or group of offices, like the commissioners) means a practically independent unit of government; it means a sheriff, a district attorney, a tax collector, a coroner, etc., each revolving in his own orbit. Under such conditions there cannot be the complete harmony which is necessary to secure the fullest measure of good results.

Further, there is no need why most county officers should be elective. They determine no policies: their election, properly, signifies no real public issue. The best experience in American cities points to the fact that most satisfactory results can be obtained if their affairs are administered by a single body of men, elected by the people, who either assign their several members to the headship of different branches of administration, or, better still, appoint a single executive or city manager who serves as the rallying point for the various officers and helps to give direction and purpose to the whole administration. There are many who are firmly of the opinion that some such plan as this would work well in counties. There would be a board of directors chosen by the people who would still be called the supervisors or the commissioners. They would select the principal county officers with the probable exception of the district attorney (because his responsibility to the state government is particularly close), and possibly an auditor who would serve as an independent check upon the supervisors.

In our opinion such an reorganization, or something approaching it, is an absolute essential to the kind of service for which the people of the counties, and more particularly rural counties, would cry out, if they only recognized their own needs.

And an up-and-coming county govern-

ment would take the leadership and anticipate the needs of the people! There is a great, far-reaching and vital work to be done by a modernized county government, and this we propose now to indicate.

The Health of the County

What of public health in your county? Better than in the cities, you proudly answer. Perhaps, if you live in a rural county. Of course, it *ought* to be better. Your people live more in the open air; they move about instead of tying themselves to desks and factory machines. But that is not the test. The only true standard of public health is the hundred per cent standard. Are you making good on your natural health advantages? In North Carolina the state health authorities found that the rural people were not. They found that country life in that section had hazards of its own. They have consequently installed a statewide system of health which makes the county the unit, for, as Dr. W. S. Rankin, the secretary of the state board of health, says, "There is a field of county health work, a field which only the county can rightly occupy,"—for the simple reason that the health program can be adapted, in that way, to the needs of individual communities. The program in North Carolina embodies the control of contagion, inspection of schools, soil pollution work, life extension work, infant hygiene, abatement of nuisances, anti-malarial work and anti-tuberculosis work. When the needs of the county are sufficient to demand it, provision is made for a specially trained, full-time county health officer. To bring the health program to its full fruition requires the progressive education of the people in health ideas. In North Carolina this is done by state officials. Might it not be a little better if it could be done on local initiative?

The Schools of the County

What of your schools? Just at the present time we are told that rural education faces a serious crisis, due in part to the inadequate salaries of teachers, but back of that, probably, to the lack of a proper public opinion for good educational facilities. Rural education as at present organized cannot begin to compare with that furnished in the cities. One reason is the district system, with its numerous local boards and their petty politics and jealousies. There is no proper supervision, no standards of method; the financial basis of the thing is wholly unsatisfactory.

Recognizing this situation, the United States Commissioner of Education has recommended a complete reorganization of rural schools on the county-unit plan, by which he means the county as a unit of taxation and administration, a county school tax, county schools funds (including money received from the state), a county board of education, a county superintendent of schools (who will have actual educational and not simply administrative supervision), district school trustees who would be custodians of local school property and serve in an advisory capacity to the county board. A number of the southern states have the county-unit system.

County Libraries

How is your county fixed for library facilities? Some of the states have made great strides in the establishment of county libraries. California, for instance, has made such provision. But the overwhelming majority of the people in the rural districts of the country are wholly out of reach of the opportunity to read good books, or books of any kind, for that matter.

County Planning

Then there is such a thing as county planning. There have to be improvements in your country in the way of bridges, roads, etc. How is it done? In a haphazard way, according as some group of people in the county takes a notion that some development should be put thru? Or have you made a survey of the county to determine where roads and bridges are most likely to be needed in order to put your county into the most effective touch with the rest of the world and to encourage contact between the people within the county, to pave the way to better schools and churches? How about the financing of a county plan of roads?

The Gist of the Whole Matter

Not only ought county officials to recognize their place in the scheme of things, but they have a real opportunity to build up a more healthy county politics based upon such a program of service as has been suggested.

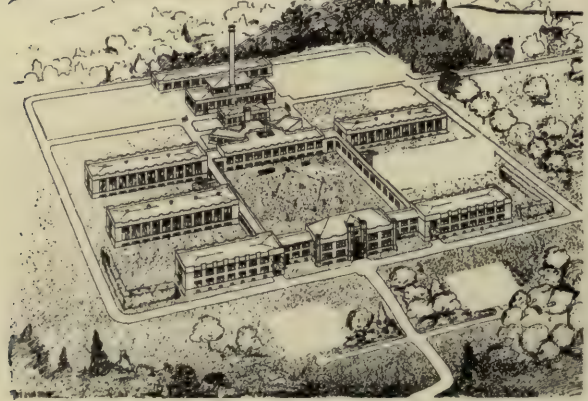
A Modern House of Correction

By William H. Momsen
Inspector, House of Correction, Milwaukee, Wis.

IN 1917, Milwaukee County spent nearly $850,000 on a new House of Correction, which is located at Granville, nine miles north of the city. The accompanying drawing shows the general layout or plan, except for the residence of the superintendent, which stands about 300 feet to the left of the building itself. The cost of the buildings amounted to $634,421.42, which included the architect's fee of 6 per cent. In addition, the sum of $199,467.47 was spent for heating, ventilating, plumbing, sewage disposal, boilers, engines, generators, refrigeration, ice plant, window operators, etc. The grounds of the new institution cover 450 acres.

The building was first occupied in July, 1917, and was thrown open to general inspection the week of November 11. So much interest was manifested by the public that over 4,000 persons visited the institution during that week, nearly all of them citizens and taxpayers of Milwaukee County. At the end of that period the institution was closed to visitors, altho individual visits to individual inmates were permitted as before at stated times. By this method the inmates are protected from indiscriminate visitors. Interest in the institution, however, continues to be so great that the grounds and buildings may be opened to general visitors on certain days on payment of an admission fee of 25 cents, which will be devoted to a library fund. This, however, has not yet been determined.

The buildings shown in the accompanying illustration include a chair factory, modern and complete in every detail, with an annual output of over 90,000 chairs; an administration building, a mess hall and kitchen, a bakery, laundry cell houses; dormitory, hospital and school quarters, all constructed about a commodious recreation court; and in addition the inspector's dwelling, and the farm buildings, which house 70 head of Holstein cattle besides a considerable number of hogs and poultry. The illustration does not do full justice to the grounds, for much planting has been done about the buildings, and trees and ornamental shrubbery have been placed upon the road leading to the institution, so that the grounds now present a very attractive appearance. All the work on the farm is done by prisoners. During the first year, 176 acres were under cultivation, and as many as 60 men were employed at one time. During 1918 the cultivated area was increased to 240 acres, and 80 men were employed upon it. Among the improvements constructed entirely by the prisoners may be mentioned 27,500 feet of drain tile on the farm. Since the institution was first occupied, in the fall of 1917, a complete hospital equipment has been installed, with a trained nurse in charge. As a result, it is no longer necessary to send persons to the county hospital for treatment, or even for operation, as was formerly the case in the old institution.



AIRPLANE VIEW OF THE MILWAUKEE COUNTY HOUSE OF CORRECTION

Religious services are held regularly in the prison by ministers of various denominations. A full-fledged prison band is one of the striking features of the institution. It should be borne in mind in considering such an institution that the persons com-

mitted are known as "short-termers," such as drunkards, beggars, burglars, carriers of concealed weapons, and other petty offenders. Here they are given an opportunity to engage in useful employment, to have some part of their labor in the open air, and to reëstablish points of contact with their fellow-beings on a better basis.

During the first three months before the factory equipment was ready for operation, the county officials sought and obtained employment for as many as 175 men on the building of concrete roads. Of these only six escaped, three of whom were soon recaptured. The men evidently enjoyed the work and were anxious to be chosen for it, and the improvement in their health and dispositions as a result of it was marked. It was not possible to repeat the experiment during 1918, as during that year road-building operations were not engaged in by the county to any extent.

The officials are protected by a new civil service law, so that no political meddler can undo the good work which is being accomplished. The buildings are as modern as up-to-date engineering can make them, and the methods of treating the prisoners and handling their problems merit the warm commendation of such prison experts as B. Ogden Chisolm, member of the Exective Committee of the Prison Association of New York, who made a special report upon the institution, in which he said, "Judging by all the faces I saw, by the men I met and talked with and by reading over some of the letters being sent out to relatives at home, I feel that there is genuine contentment in the prison." Further on in his report he refers to the institution as "one of the most modern of prisons,—one of which Wisconsin can be justly proud."



TYPICAL CELL IN MILWAUKEE HOUSE OF CORRECTION



Courtesy of Rundle-Spence Mfg. Co.

CENTRAL SHOWER-BATHS USED IN MILWAUKEE COUNTY HOUSE OF CORRECTION

Ventilation in Rural Schools

THE "district school," where so many famous men learned the "Three R's," needed no ventilating system. The cracks around the windows and between the weather-boards let in plenty of air—more than the big stove could keep warm.

But the modern consolidated school, serving a whole township, must have the best of heating and ventilating equipment, including, of course, forced draft. The Orange Township School, in Blackhawk County, Iowa, six miles south of Waterloo, has two low-pressure boilers, a temperature control system, and a ventilating system thru which a 24-inch fan, driven by a Westinghouse 5-horse-power single-phase motor, forces air to every room.

The building has now 230 pupils, and serves 38 square miles of rich farming country. Electricity for power and lighting is secured from a transmission line passin the door. The pupils are hauled free c charge in twelve busses furnished by th School Board.



ORANGE TOWNSHIP SCHOOL, BLACKHAWK COUNTY IOWA

Modern ventilation has been defined a the provision of moderately heated fres air in motion. Natural ventilation is nc sufficient in buildings of any cor siderable size, and in these eithe plenum or vacuum fan systems o both are required. The up-to-dat county or township which is elim nating the small one-room schoc and is building larger schoolhouse at central locations is faced wit the same problem of ventilation a the city schools. Larger classe are gathered together; the struc ture itself is more complex, an particularly on cold days the great est care must be taken in constantl changing the air without the pro duction of chilling drafts and i properly distributing it thruout th building.



24-INCH MOTOR-DRIVEN FAN, USED TO FORCE FRESH AIR TO EVERY ROOM OF THE ORANGE TOWNSHIP SCHOOL

The air inlet to a schoolroom i best located at a height of 7 or 8 feet from the floor, thus giving a even distribution, as the warme air tends to rise and spread uni formly under the ceiling; it ther gradually displaces other air, and the room becomes filled with pure air without drafts. The cooler air sinks to the bottom of the room and can be taken off thru ventilat ing registers placed near the floor

Eternal Vigilance the Price of Freedom from Water-Borne Typhoid

The Epidemic at Herkimer, N. Y., a Warning to Water-Works Officials

By Theodore Horton
Chief Engineer, New York State Department of Health

OUTBREAKS of water-borne typhoid fever among the municipalities of this country are not as frequent today as in the last two decades, on account of the increased knowledge of the causes of this disease, the watchfulness of health officials over the food and water-supplies of the country, and the increasing reliability of chlorine control apparatus. One of the great causes for anxiety on the part of health officials now is the failure of the normal water-supply of the community, making it necessary to resort to emergency supplies of inferior quality. These supplies are often insufficiently sterilized because the responsible municipal official frequently does not appreciate that increased caution, larger chlorine dosage and more frequent bacteriological analyses of the questionable water are absolutely necessary to eliminate the possibility of a water-borne typhoid epidemic.

Failure of officials to recognize these points was the cause of a bad outbreak of typhoid fever in Herkimer, N. Y., last fall. The epidemic ran from about September 1, 1918, to January 1, 1919, during which time some 155 cases of typhoid fever were reported from this city of 8,000 inhabitants. Upon the discovery of an undue prevalence of typhoid fever in the village, an epidemiological investigation was started, in October, 1918, by the Division of Communicable Diseases of the State Department of Health, and at the same time an investigation of the water-supply was made by the Division of Engineering. The information secured by these two investigations pointed conclusively to an infection of the public water-supply as the primary source of the outbreak.

Failure of the Municipal Water-Supply Makes an Emergency Supply Necessary

On August 28 the municipal authorities found that it would be necessary to augment the regular well supply of the village by pumping water directly from the hydraulic canal by means of a fire pump at the plant of the Herkimer Fiber Company. An attempt was made to sterilize this emergency supply by means of liquid chlorine, but the apparatus was not set up to suitably and adequately accomplish this purpose. On September 5, 6 and 7 unchlorinated canal water was pumped into the distribution system, and in addition the regular well supply was unchlorinated on September 1, 2, 5, 6 and 7. The use of the canal was discontinued on September 29, and about this time the suction of one of the pumps at the village pumping station was rearranged so as to permit direct pumping from West Canal Creek, with chlorination. Prior to the 7th of September the entire supply of the village was treated more or less continuously with chlorine, altho from the records of operation there would appear to be some doubt as to the adequacy of the treatment until November 25, when supervision of the chlorination of the water-supplies was taken over by the Division of Engineering of the State Department of Health.

Inspection and Supervision of Supplies

On September 23, October 8 and 22, the Herkimer supply was visited and inspected by state engineers. On each of these inspections the chlorine apparatus was found to be operating properly, and samples showed that the treated water was free from active contamination. The records of operation of the chlorine apparatus and the results of analysis made for the village by a competent outside authority indicated that adequate sterilization of the supply had not been obtained, even after the visit of the state engineers and in spite of admonitions with respect to the extreme importance of adequate sterilization. Because of this condition it was deemed advisable that the state should maintain temporary super-

vision of the chlorination of the water-supply. This supervision was begun on November 25 and continued until December 20, during which time an engineer from the State Department of Health was detailed to remain at Herkimer in constant touch with the water situation. Inspection of the pumping station was made several times daily and not infrequently at night. Frequent chemical tests were made to determine the presence of excess chlorine in the treated water, and samples for laboratory examination were collected about twice each week. Chlorine was supplied in amounts sufficient to permit the existence of a marked excess of chlorine in the treated water at the end of five minutes, as shown by the starch-iodide test. The chlorine was applied to the water from the infiltration gallery at a rate of about 0.5 parts per million, and to the creek water at a rate of about 1.5 per million. These rates were changed as found necessary from time to time.

In addition to the supervision of chlorination, conferences were held with the municipal authorities, and communications were sent to them urging the necessity of the greatest care and efficiency in the operation of the chlorine apparatus. Finally, after urgent recommendations by the visiting officials, two men were appointed by the village to observe and record the operation of the chlorine apparatus. These men were appointed and began their duty on December 15, after being carefully instructed by the State Engineer as to the proper operation of the chlorine apparatus. As soon as the men had taken up their work, tests for excess chlorine were made at one-hour intervals, and strict orders were issued to stop pumping should any trouble develop with the operation of the chlorine apparatus. Practically no cases of typhoid were reported after the men began their work, altho it was deemed advisable by the state engineers to check over each week the records which were kept by the men operating the chlorination apparatus.

Public and Private Well Supplies

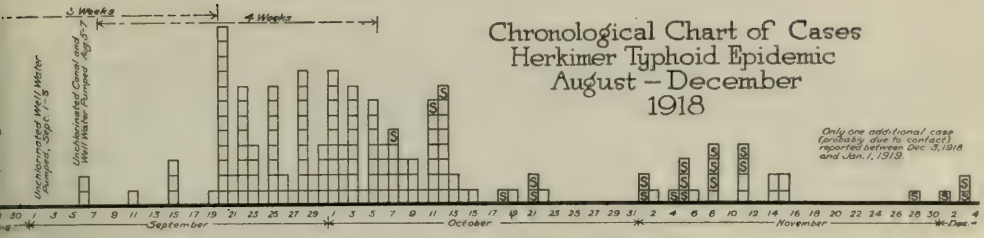
To supplement the public supply, new wells were drilled several hundred feet southwest of the pumping station. These two sets of six wells provide sufficient water to make it possible to discontinue pumping directly from West Canada Creek. Chlorination apparatus was provided for the wells and the water was adequately sterilized. It was appreciated that these wells on the outskirts of a thickly settled community were not satisfactory for a permanent source of supply, because of the numerous opportunities for pollution of the underground waters. Because of this, it is planned that the wells shall be continued only until a new permanent supply is obtained, studies for which are now under way.

During the investigation of the epidemic numerous local wells scattered thruout the village were examined. It was found that very many of these were in an insanitary condition. The water for practically all the wells was derived from seriously polluted ground water sources, and, while certain of the wells were apparently less actively contaminated than others, it was impossible to predict that such a condition would continue. Therefore a letter was published in the local press recommending that all water from these wells be boiled for drinking and culinary purposes.

A Study of the Distribution of the Cases

A careful statistical analysis of the 155 cases reported during the epidemic was made at the earliest possible time. Upon this, the accompanying curve of onset was based. No attempt was made after the early part of the investigation to determine the possible source of infection, because it was found that the evidence pointed overwhelmingly toward the water-supply, and any tabulation of additional information with respect to food supplies would be superfluous.

From the chart, it will be seen that the larger number of onsets occurred between the middle of September and the middle of October, approximately three or four weeks after the pumping of unchlorinated canal water into the distribution system. This period is closely equivalent to the average length of time required for the incubation of the typhoid germ in the human system. A second group of cases had onsets between the first and the middle of November, and, while a certain proportion of these cases may have been due to contact with cases occurring in the first group, it appeared from records of operation of chlorination and the result of bacteriological analysis



Blocks marked "S" represent secondary cases

hat insufficient application of chlorine occurred at times up to November 25, when he operation of the chlorine apparatus was aken over by the State Department of Health. After that time, however, only a ew scattering cases occurred, the majority of which were probably of secondary origin.

While most of the cases gave evidence of he use of unboiled village water for drinking purposes, practically all of the data point to the use of raw canal water for the village supply as the principal source of the infection.

During the statistical study it was deemed advisable to summarize the data with respect to the milk supplies used by the various cases.

Milk Dealers	Milk Delivered		Typhoid Cases	
	Quarts	*Per Cent*	*Number*	*Per Cent*
A	1,100	47	57	42
B	500	21	42	30
C	250	11	20	15
D	300	13	12	9
E	150	6	4	3
F	50	2	2	1
Total from principal dealers			137	
G			1	
Own cow			1	
Condensed milk			1	
Unknown			15	

From this table it will be seen that the distribution of cases along milk routes was approximately proportional to the quantity of milk delivered by the various dealers, no preponderance of cases occurring upon the route of any dealer. Thus, the inclusion of the milk supply as a cause of the epidemic was disposed of early in the investigation. It was considered advisable, however, in order to minimize the danger of the spread of the disease thru milk bottles, to require that no milk bottles be delivered to houses in which typhoid occurred. This requirement was put into effect about the first of December, and the milk inspector was instructed to follow up the matter.

Age Distribution of Cases

The following summary of the distribution of the cases by age is of interest in studying the epidemic:

Age	Cases	Percentage
0 to 10	46	30
10 to 20	44	29
20 to 30	28	18
30 to 40	15	10
40 to 50	13	8
50 to 70	7	5
Total of known ages	153	100
Unknown	2	

Altho the number of cases among children up to 10 years of age was somewhat larger than is usually found in water-borne typhoid fever epidemics, it was found that of the 46 cases within this group, about 14 were probably of secondary origin, as they occurred in households having earlier cases of typhoid.

The high mortality—28 deaths among 155 reported cases—indicated the incomplete reporting of mild cases. It should be noted, however, that this typhoid epidemic occurred during the influenza epidemic of last fall, and some errors in diagnosis may have been made. Furthermore, complications of influenza with typhoid may have increased the fatality due to the latter.

Continuance of Publicity Work

In order to prevent as far as possible a recurrence of cases, of either primary or secondary origin, a general letter of instruction and warning to the residents of the village was given to the press and also distributed thruout the village on handbills about the first of December. This letter contained specific directions and precautions to be followed by everyone in the village with reference to boiling milk and water, the isolation of cases of typhoid fever, the use of disinfectants and other essential matters. An emergency hospital established by the village was used to care for a number of cases, and the village nurse gave individual assistance and instruction at the homes of the majority of cases.

In the Herkimer investigation, studies

and report, the author makes acknowledgment of the services of E. S. Chase, Assistant Engineer, and Dr. R. W. E. Cole, Acting Epidemiologist, under whose immediate direction the investigation was carried out; also to Dr. J. E. Clark, Sanitary Supervisor, Earl Devendorf and F. Woodbury Jones Assistant Engineers, Dr. A. L. Fagan Health Officer of Herkimer, Eva M. Schie County Nurse, Mary B. Hofmeister, Villag Nurse, and William Owens, Village Mil Inspector.

The Relation of a Private Well to Typhoid

By Harry E. Barnard, Ph. D.
State Food and Drug Commissioner, Indiana

WHILE state and federal legislation is doing much to suppress the grosser forms of food adulteration, one class of foods, and that by far the most important of all, which is frequently injuriously adulterated, is not yet commonly considered as coming within the scope of food legislation. That food is water, the fluid which makes up 58 per cent of our body weight and nearly 90 per cent of the blood. No other article of diet enters so largely and completely into the construction and support of life.

Since the time man first scooped a hole in the damp earth to get a refreshing drink, it has been assumed that a well water was purer than a stream or pond supply, because of the fact that it was fed from an unknown source, which, filtering thru adjacent soil, was, in some mysterious manner, purified by Mother Earth. We have begun to lose faith in Mother Earth, and while still recogn zing the power of the chemical processes taking place within her to destroy organic matter, and the physical properties of sand as a filtering medium, we have learned, thru bitter experience in the home and careful investigations in the laboratory, that the earth often fails of the duty so commonly imposed upon her.

The Average Well a Public Menace

Indeed, the average well, viewed from the standpoint of the health officer, is a public scandal. We lustily sing the "Old Oaken Bucket," a mass of sentimental twaddle, which, if the facts could be set down in cold figures, would be proved to be responsible for hundreds of cases of typhoid annually.

Why is it that we are so slow to realize that the water in a well is nothing but th water which falls on the surface of th ground and, after leaching all the organi matter with which it comes in contac collects in a man-made cavity. Even if th surface of the ground around the well clean, if the well-curb is properly built an the platform dust-proof, we have no know edge of the character of the water flowin thru the well.

The volume and velocity of the rive flowing on the surface is measurable, an it never occurs to us that the water lyin below the surface is just as surely flowin always toward a definite outfall. A we only pierces this flowing stream, and b removing the rock and gravel, enlarges th void until a pump or bucket may reach th supply. If undisturbed, under normal co ditions the water in the well flows slowl out in just the same course it would hav followed if the well had not been made.

When, however, a well is dug and th surface of the water for the time being thereby lowered, the direction of the flo is changed and all the water filling th voids about the well in every directio ceases its natural flow and drains towar the lower level naturally created by the re moval of the well water. The more fre quently the well is used, the more fre quently the natural flow is interrupted. Th condition is but little different from tha created when one dips a bucket of wate from the open surface of a lake. The voi created for the moment is immediatel filled by the inflow of the surroundin water. If a well is freely used, inflow wi take place for a distance of one hundre feet laterally, and in the direction fro which the ground water flows for a muc

SANITATION AND WATER SUPPLY

The city death-rate is steadily falling.
The country death-rate is almost stationary.

WHY?



Poisoned Well-
No Plumbing - No Sewage Disposal.

The health of the country family

DEMANDS

1. Pure water free from surface drainage.
2. Modern, sanitary plumbing.
3. Sewage disposal by irrigation or a filter-bed. Cesspools are dangerous.

Courtesy National Child Welfare Association

greater distance. Hence, ordinarily, a source of filth, in order to contaminate a well, must be within one hundred feet or, in extreme cases, two hundred feet, except in the direction from which the ground water flows. But this is not the whole truth, for the original source of filth may be much further removed and gradually poison the soil in the direction of the well, until it has included the well within its sphere of influence. The effluent from our cesspools has been known to seep thru the soil for a distance of two hundred yards and finally reach and pollute a well water.

If these facts, simple as they are, were understood as they should be, would we find, as we do to-day, hundreds of thousands of wells in our thickly settled communities? The farm well, originally pure, is often enough subject to the baneful influence of barnyard, privy vaults and kitchen wastes. But how can the city lot, forty, sixty or one hundred feet in width, backing up to a similar lot fronting on another street, occupied perhaps for many years by dwellings, stables and outhouses and saturated thru and thru with all the wastes of living, be depended upon to furnish a potable water? Can anything be more obvious than that the shallow well on such a lot must be supplied by the water falling on the surface of the adjacent ground, and that such water as leaches into the soil and finds its way toward the lower level of the well must carry with it all the soluble organic and inorganic matter thru which it passes, and because of its rich nutrient qualities be a perfect host for bacteria? The surface well in cities and towns should be looked upon as a cesspool, for that is exactly what it is, a pit in the yard into which the soluble wastes of living find their way, later to be drawn to the surface, sparkling, cool, pleasantly flavored, and yet in fact wholly different from the water once occupying the soil now given to the activities of existence.

In some parts, notably in the East, health officers have long since recognized the folly of allowing the shallow well to be utilized as a water-supply in their communities, and whenever a public water-supply protected from pollution by a carefully selected source or purified by proper treatment is available, the well as a source of drinking water has had to go. The protest of the landlord and house owner that he be allowed to choos for himself his drinking water, and, if he wills, to depend upon the effluent in h backyard, is no more considered than h desire as to the vaccination of his childre or the policing of his community, or the a tivity of the fire department in suppressin the flames on the roof of his home.

Results of Well Water Tests in Indian

The character of the shallow we whether it is located in a thickly settl community or in the country district, shown by the thousands of analyses ma by health officers in every state. Th laboratories of the Indiana State Board Health have been in operation since 190 In the more than thirteen years we ha been analyzing water-supplies we have d termined with such a degree of accura that our statement is not a hypothesis but fact, that the well supplies of the state Indiana are not only to be viewed with su picion but are, in rather more than 50 p cent of the cases, definitely polluted.

If such a statement had been made t first or second year of our work, it wou undoubtedly have been pointed out that t waters analyzed did not represent avera conditions and that the samples sent were from wells suspected of being impu and that while many of these samples d prove to be polluted, by far the great number of wells were pure and safe. B as year after year we have tabulated t results of our work, we have noticed t very singular fact that our results vari very little indeed. In fact, the percenta of bad and doubtful well waters in the ye 1918 is almost exactly the percentage r ported the first year of our work in 190 It is impossible to believe that the heal officers, after studying the well supplies their communities for many years, are st sending in only the worst waters, or th the individual owner is not asking for analysis save when he suspects the puri of his supply. I am convinced that of t 500,000 wells furnishing water to the ci zens of Indiana, at least 250,000 are n furnishing pure water, but a water co taminated by the wastes of the home a community.

Of 11,026 private wells examined in t last 13 years, 7,077 have been classified shallow wells, and 3,949 as deep wells. Th

ıssification is not perfect, for it is frently impossible to get data sufficiently cquate to place a well in its proper class. e classify all dug wells as shallow wells, d all driven wells as shallow wells when is evident that the well does not pass thru pervious strata. In some parts of the ıte a layer of clay or hardpan may lie so ɔse to the surface that a driven well not ɔre than ten feet deep may in fact reach ɔond water and so be entitled to be classed a deep well. In other parts of the state, pecially where sand and gravel deposits e deep, a well may be seventy-five or one ndred feet in depth and still tap only surce water. Obviously, when we do not ow all the facts, our classification is subct to some inaccuracies. Nevertheless, it significant that of the 7,077 shallow wells ed as private supplies, but 2,830 were ɔod, 3,549 were classified as bad and 698 doubtful. Since a doubtful well water bound sooner or later to pass the danger ıe, in the interests of safety it should be ewed with suspicion, and classed with the d waters. This means that 60 per cent of e shallow wells are impure. Of the 3,949 ep wells used as private water-supplies, 179 furnished pure water, 487 bad water, ıd 283 doubtful water. In other words, ore than 80.5 of all the deep wells fursh a pure water.

The difference in the quality of the deep ıd shallow well is thus strikingly shown. the actual facts were at hand, I have no ɔubt that the proportion of deep wells of ıtisfactory character would be greatly ineased. There is no real reason why every roperly cased well which passes thru imervious strata should not furnish pure ater, save in the isolated instances where wage is poured thru sink-holes or abanɔned gas wells into the lower levels. Such ɔnditions do obtain in the cavernous gions in the southern part of Indiana, and ıey are not unknown in the so-called gas elt.

The geologist and the honest well driller ɔth know, however, that the terms "second ater" and "deep wells" are largely meanıgless in so far as the quality of these aters is concerned. The analytical data n the character of the deep well supplies ıow of course a relatively small percentage of polluted waters, but the fact that 2 per cent or 5 per cent or 10 per cent of the deep well supplies, or as our figures show, 12.3 per cent, are polluted and therefore dangerous, warrants the definite conclusion that the untested deep well is dangerous. If one dog out of every eight running at large in the community were suffering from rabies, we would kill every dog, healthy and diseased, before nightfall, but since only 12 per cent of the privately owned deep wells are polluted, we with smug satisfaction pride ourselves on the purity of our waters.

Let Us Fight the Battle for Pure Water

It is a hard thing to convince a family that has used the water from the well just outside the kitchen door and on the way to the outhouse, it may be for generations, without suffering the scourge of typhoid, that the water drawn from that well is the filtered effluent from the privy vault and the partly purified seepage of dish water and kitchen slops which, for years beyond counting, have three times a day soaked the soil around the well. Even the peculiar taste and odor of the water have finally become a natural taste and odor, so that the water taken from the tap in town fails to satisfy and because it is different provokes suspicion that all is not well with it.

We must use the magnifying glass on our private water-supplies in order that the eyes which have become careless may see the truth in all its nakedness. We must compel our people to recognize the surface well as a menace by constant reiteration of the facts the laboratory reveals. We must tear down the wall of reverence thrown around the family well by the memories of youthful days and faith in its pristine purity. We must force our citizens who have made their private wells a fetish to see them in their true light. We must close every well in every settled community provided with a supervised water-supply. Until we have substituted the public supply, around which every safeguard science can devise has been thrown, for the private well, with all its potentialities of disease, we cannot claim to be a cleanly people.

ACKNOWLEDGMENT.—Read before the recent meeting of the Indiana Sanitary and Water Supply Association.

Softening a Municipal Water-Supply for Domestic Use

Hinsdale, Ill., Has Five Years of Successful Treatment to Its Credit

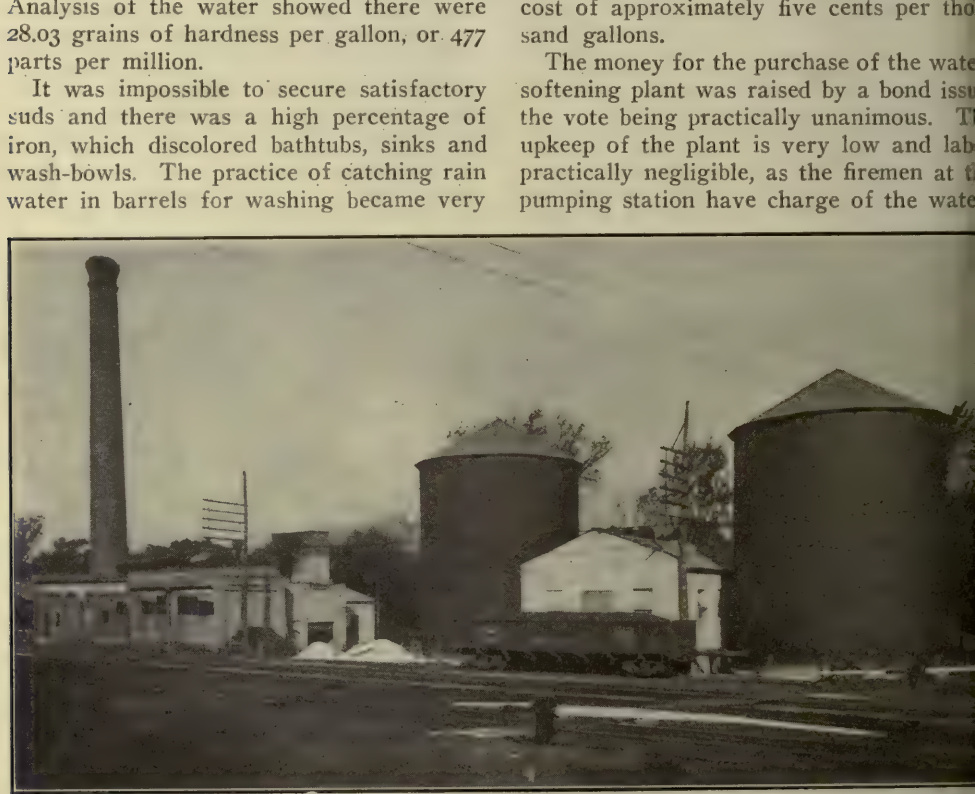
By H. H. Bristol
Superintendent of Water-Works, Hinsdale, Ill.

FIVE years ago there was a great deal of discontent in Hinsdale because of the extreme hardness of the city water, which is obtained from two deep wells. Analysis of the water showed there were 28.03 grains of hardness per gallon, or 477 parts per million.

It was impossible to secure satisfactory suds and there was a high percentage of iron, which discolored bathtubs, sinks and wash-bowls. The practice of catching rain water in barrels for washing became very general, until it was frowned upon by the health authorities. The odor of the rain water and the fact that it frequently contained animal growths did not add to its popularity. Plumbing bills were tremendous because of the need of constantly replacing clogged pipes and installing new toilet facilities when the old became too discolored to be tolerated.

After considerable agitation, five years ago, adequate modern apparatus was installed for softening the water. Hinsda uses approximately seven million gallons water per month. All this water is n treated in the water-softening plant at cost of approximately five cents per tho sand gallons.

The money for the purchase of the wate softening plant was raised by a bond iss the vote being practically unanimous. T upkeep of the plant is very low and lab practically negligible, as the firemen at t pumping station have charge of the wate



THE HINSDALE WATER-SOFTENING PLANT STEEL TANKS AND PUMPING STATION

softening. The plant has a capacity of million-and-a-half gallons a day, which considerably greater than present requir ments. The Board of Trustees consider it wise to build for future growth, for it a well-known fact that as soon as any m nicipal water-supply is improved, the co sumption increases.

The softening plant provides treatme with lime and soda ash, sedimentation a filtration. The steel mixing tank for chem

ls has a capacity of 2,500 gallons. Six ndred pounds of soda ash is dissolved th the aid of live steam, and 1,800 pounds lime is added just before the solution is wn off into the feeding tank. One charge ntains sufficient chemical to treat 450,000 llons of water at the rate of 4 pounds of ne and 1⅓ pounds of soda ash per 1,000 llons. This ratio would be changed for vater of different characteristics.

The 28.03 grains of hardness per gallon of the raw water is reduced to an average hardness of approximately 4.5 grains. This has been reduced as low as 2.7 grains, but the 4.5 standard has been adopted as the most economical and satisfactory. No public improvement instituted in Hinsdale in recent years has met with so great popular approval as the water-softening plant. It has been the direct cause of increasing the population of the town and has promoted civic pride and public satisfaction.

Clean Catch-Basins for Akron

With Auto-Eductor, Basins Are Maintained in Fine Condition

By H. S. Morse
Director of Public Service, Akron, Ohio

THE cleaning of catch-basins is one of the sanitary problems which must be attacked by progressive cities. To al- these outlets to become filled with dirt l filth seriously impairs their usefulness the draining of streets during rain- rms, and provides, in the summer, breed- -places for mosquitoes. To clean these ins by hand is a particularly disagree- e piece of work, both to the worker and the passing public, and is expensive.

n order to do away with these condi- ns, the city of Akron purchased an Ot- son Auto-Eductor of the hydraulic ejec- type. This machine is mounted on a on hydraulic dump truck, with a box ly of six cubic yards capacity.

The machine was put into operation in ron early in 1918, and during the first en months was used to clean 1,044 ins. The average size of these catch- ins was 4 x 5 feet, with a depth of 7 feet. ny of the basins had not been cleaned several years, were filled to the top h dirt, and had grass growing on the face. The total amount removed was 1,- cubic yards. As there are 890 catch- ins in Akron, this means that all the ins were cleaned at least once, and ne of them several times, during the t seven months that the machine was service.

Three men were required to operate the machine, including the driver of the truck. The number of days worked was 148; 1,- 556 gallons of gasoline were used, and 245 quarts of oil. Including payrolls, material used, interest on investment, depreciation and overhead charges, the cost of cleaning was $3.50 per basin.

From the performances of this apparatus in other cities, the cost seems to be somewhat high, but if these other reports are correct, the difference is undoubtedly due to the large capacity of the Akron catch-basins and the fact that many of them had not been cleaned for several years. Records to date in the current year show a considerable reduction in unit cost. The cost per basin of cleaning with the Auto-Eductor in Akron is less than the cost by the old hand method, and therefore an actual saving of money has been effected. A greater advantage is that with the small number of men all the basins have been cleaned, which has never been accomplished before. The work has been done in a sanitary manner so far as the public is concerned, and in cases of basins clogged during storms prompt service has been given. On the whole, the city is well satisfied with the investment.

The entire work of cleaning the catch-basins has been done under the immediate direction of H. R. Russell, Superintendent of Street Cleaning.

Safeguarding Municipal Water-Supplies by Tree Growth

By Paul D. Kelleter
Forest Service, U. S. Department of Agriculture

A PURE and abundant water-supply is essential for the well-being of every community. With the growth of the demand for water it becomes necessary for most of the larger municipalities to develop storage facilities under conditions and in country not naturally adapted or originally used for this purpose. In doing so, many problems are encountered. Where the lands surrounding the storage basin are without tree or other vegetable growth, there are the problems of erosion and consequent silting up of the reservoir. If, on the other hand, the reservoir is already surrounded by well-wooded lands, the problems are different. In this case it is a question of preventing the pollution of the water by the leaves and twigs and of maintaining the protective covering on the surrounding lands, or, if the existing tree growth is not the most desirable for the purpose, of gradually replacing it by more suitable tree growth.

Trees the Best Crop for Reservoir Lands

The full utilization of the lands from the productive standpoint should above all be considered. To be sure, the municipalities or public service corporations are not dependent on an income from the utilization of any crops that may be grown on the lands surrounding the reservoirs. Nevertheless, in most instances it is possible to make the lands productive by the growth of successive crops without in any way interfering with the main purpose. This being so, the question narrows itself down to determining the crop that is best under the conditions and the growing of which has no objectionable features.

The use of lands surrounding the storage basins for agriculture is not advisable. In many instances it is altogether impracticable on account of the roughness of the slopes and the character of the soil. Even where natural conditions do not make farming impracticable, there is nevertheless objection to the cultivation of such lands, because the constant disturbance of the soil by plowin destroys all vegetable growth capab of holding the soil together, increases th liability of erosion or soil washing, of co sequent pollution of the waters in the rese voirs, and even of silting up when the so movement is heavy. The use of the ma ginal lands even for the raising of ha which does not require annual plowing an so does not destroy the vegetative growt except at long intervals, is objectionable b cause of the gradual deterioration of th soil. This deterioration can be avoided onl by enriching the soil with fertilizers, th use of which is objectionable on lands o this kind because of the danger of its bein washed into the reservoirs and not onl making the water turbid but polluting it.

Experience has shown that trees meet th peculiar requirements better than any oth form of vegetative growth. Forests o watersheds nurse and conserve the rain an snow after they have fallen. Water run down a barren, hard surface with a rus all at once. It runs down a spongy, so surface much more slowly, little by littl The forest cover—the trees, brush, gras weeds, and vegetable litter—acts like a b sponge. It soaks up the water and check it from rushing down all at once. As a r sult, the force of the water is greatly le sened and there is a minimum danger o soil washing and consequent silting up o the reservoir and pollution of the wate These considerations are of the greate importance in storage reservoirs furnishin water for community use.

The Choice of Species

In the artificial afforestation of barre slopes it is possible to select species of tre which are the best adapted for the speci purpose from every standpoint. Conife seem to fill the bill most satisfactorily, pr vided the choice is made of species that ar adapted to the soil and climatic conditio of the region in which they are used. Th reason for selecting conifers is to be foun



SPEARFISH CREEK IN THE BLACK HILLS NATIONAL FOREST, SOUTH DAKOTA

A well-forested watershed in its original condition. Protection of such areas is one of the important duties of forestry and water departments

n the all-year-round protection they afford o the ground and to the smaller amount of lébris of twigs and leaves as compared vith broad-leaved trees.

The greatest development in the protec- ion of the marginal lands of the storage reservoir has been in the East, and white ine has been the tree most favored, both n artificial plantations and in the develop- nent of the forests existing on the water- heds. White pine was admirably suited for his purpose. In recent years it has fallen nto disfavor, not thru any shortcoming of ts own, but thru the prevalence of the ungus growth known as the white pine lister rust. which affects this tree most eriously. In the infested region it is in- dvisable to use white pine for plantations f this kind, and even in the regions at resent free from the blister rust the use of vhite pine is likely to prove a mistake. It s best to use some other conifer.

Norway pine has been put forth as a sub- titute for the white pine and has proved o be very satisfactory. Norway pine will nake a good growth even on poor soils. On icher soils the growth is particularly vigor- us and a good growth of needles is pro- luced. Scotch pine is very adaptable to nany soils, but it requires more care in the selection of sites and is therefore more restricted in its use. Austrian pine is a hardy and rapid grower, not at all particular as to the soil, and will make satisfactory growth even in exposed situations. There are a great many other conifers that are available and can be used to advantage.

Method of Planting and of Seeding

Under ordinary conditions the necessary planting stock can be obtained from commercial nurserymen. Except where the planting operations are to extend over a long period of years and involve a large area, it is generally advantageous to obtain the planting stock from nurserymen, rather than for the water company to undertake the raising of its own nursery stock. To do so saves the expense of installation of the nursery and does away with the necessity of selecting a nursery site.

It is advisable to use as planting stock seedlings from three to four years old and space them about 6 feet apart each way. Some plantings have been made at a distance of 5 feet each way. Spacing trees 6 feet each way calls for 1,210 trees per acre, and spacing trees 5 feet each way calls for 1,742 trees per acre. In all plantations it is particularly desirable to plant the trees



WRAPPING TRANSPLANTS IN WET BURLAP TO PREVENT DRYING OF ROOTS

Transplants must be handled with great care, wrapped in bundles of wet burlap, and not removed until the plant is placed in position

along the water's edge, close together, to form a dense hedge.

Afforestation of these areas is also possible by direct seeding. In view of the general desire for the establishment of an immediate cover, direct seeding is ordinarily too slow a method and not one to be preferred to the use of transplants. The initial cost is less in direct seeding than it is in planting, but the percentage of failure is higher, and more filling in of fail-spots is needed than in planting. The best results in direct seeding are obtained by the seed-spot method. At intervals of 5 or 6 feet each way the top soil is removed by means of a mattock or other handy implement for a space of about 12 inches square. This exposes the mineral soil and provides a proper germination bed for the seeds deposited by the workmen. After the seed is placed in the seed spot, it is lightly covered with soil. This is quickly done by the laborer by simply kicking over a bit of the loosened soil.

Treatment of Areas Already Forested

The problems of management are very different on the marginal areas already forested. A forested area has the advantage of possessing the conditions it is aimed to create by artificial afforestation. The adequacy with which the situation is met depends upon the nature of the forest growth, its condition, and the completeness with which it covers the area.

Ordinarily, the first consideration in handling areas of this kind is to utilize advantageously the forest resource in the form of mature trees so as to avoid any loss, and to improve the stand in order to increase its productivity and insure its continuity.

The selective thinning of such stands is of prime importance. As a rule, the natural stands are mixed stands, which means that the forest growth is made up of a large number of different tree species—some conifers, some hardwoods. Of prime importance under conditions of this kind is to change gradually the mixed stand to a pure stand of conifers. This can be done by cutting out the hardwoods and either replacing them by artificial planting of conifers in the openings or letting the open areas be naturally restocked by seed from the surrounding large trees. In handling such forested areas the very first effort is to convert the stand along the water edge into a dense hedge of conifers which will serve as a screen and barrier and will prevent the large amount of leaf and twig litter that accumulates in a hardwood forest from being carried into the water.

The gradual transition of a hardwood forest to a pine forest is being carried on with marked success in the East in connection with the management of several protection forests for storage reservoirs. The work being done in this connection on the lands of the New Haven Water Company is one of the most notable examples of a gradual and successful transition of a mixed hardwood forest to a forest predominatingly pine.

The water-supplies of Colorado Springs, Colo., come from the adjacent mountain slopes within the Pike National Forest. This is one of the many western cities that



Courtesy New York State Conservation Commission

THE FOUR STEPS IN PLANTING A YOUNG TREE TO ESTABLISH A FOREST

have made special arrangements with the Forest Service for the protection of such areas against any possible pollution and have excluded all forms of utilization. Particular attention is given to protection against fire, and steps are being taken to reforest those portions that are denuded.

In the case of the Colorado Springs watershed, reforestation by planting has been carried on successfully for the last twelve years, and a noticeable new stand of trees is to be found on the areas that have been reforested. The necessary planting stock is obtained from the forest nursery maintained at Monument, Colo., by the U. S. Forest Service.

Fire Protection Essential

Success in afforestation or in the maintenance of the forest growth already in existence is dependent on one other very important factor. The work of years can be destroyed in but a very short time by fire, and so it is essential that adequate protective measures be taken to guard the marginal lands against fire. In the interests of maintaining the purity of the water, access to these lands is denied campers, hunters, and others, which lessens the chance of fire from such causes and restricts the danger more closely to fires that come from adjoining lands. This reduces the necessary protective measures to the simple provision of a surrounding area from which every effort is made to remove the inflammable material and in which the accumulation of litter is prevented. Adequate initial steps and constant subsequent care will go a long way to lessen the danger from fire and protect the existing forest growth, whether large or small. Without adequate measures of protection no good purpose is served by efforts at afforestation or improvement of the forest growth.

New York Neighborhood Houses Unite

Thirty-seven neighborhood houses of New York City have formed a union known as the United Neighborhood Houses of New York, with office at 289 Madison Avenue. The United Neighborhood Houses plan to appeal to city, state and national authorities in cases where action is necessary to safeguard the public health, and they will work for the improvement of public education and for the good order, comfort and convenience of the community. The entire plan of the new organization, as its name implies, looks toward a broader community program taking in all phases of community life. With an enlarged program, it is proposed that a public health service be installed whereby the city may be divided and health centers established to help in carrying out health propaganda and education. A club service, with a director who shall standardize and advise concerning the development of club work in the various houses; an arbitration board whose object shall be to assist in the impartial arbitration of labor disputes; the extension of the cooperative movement to a scheme covering the industrial neighborhoods of the city—these and many other projects, such as household economics service, Americanization work, and hospital social service, are being considered as a part of the broad plan of work contemplated.

Mosquito Control

Methods Developed at Army Camps and by Progressive Communities

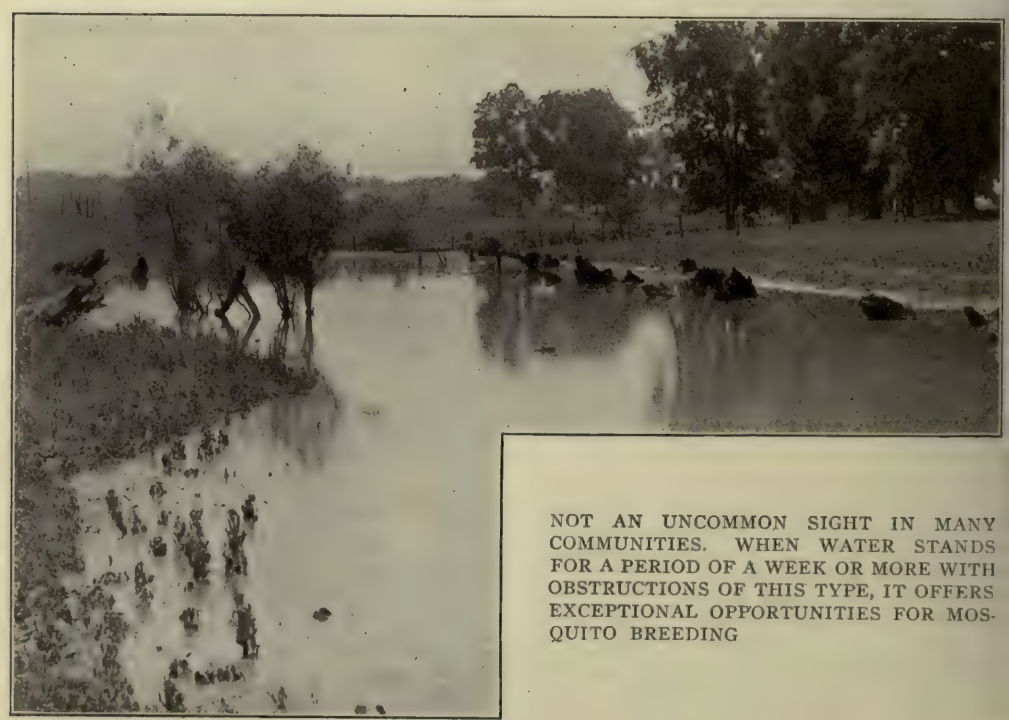
By W. Dwight Pierce, Ph. D.
Entomologist, Bureau of Entomology, U. S. Department of Agriculture

PROBABLY more money and more concentrated effort have been devoted to the control of mosquitoes thruout the world than to the control of any other disease-bearing insects. The anti-mosquito work now under way in the United States under direction of the Public Health Service is the biggest sanitary campaign this country has ever undertaken. When we consider the vast efforts of India, Italy, Panama, Cuba and other countries against these insects, we realize the importance of the problem.

Prevention of Mosquito Breeding

By far the most important measures to be taken are those which prevent the breeding of mosquitoes, and therefore we have to deal in some manner with water. If general mosquito control is sought, it is not essential to ascertain the species breeding, and when large communities or armies are to be protected against disease-bearing mosquitoes, time may not permit of general mosquito control but may necessitate particular attention to the haunts of the disease-bearers.

The preliminary measures to be taken are therefore the organization and training of scouting parties designated primarily to search out the breeding haunts of disease-bearing species and report them to the details or squads designated for control work. The scouts must be trained entomologists skilled in the knowledge of mosquito haunts. They must examine the water in all receptacles in and around buildings and in discarded vessels. They must seek out all puddles, hoof-prints, wagon ruts, tree holes, ditches and streams and carefully examine these. A chart should be kept showing the location of all water, and this can be marked



NOT AN UNCOMMON SIGHT IN MANY COMMUNITIES. WHEN WATER STANDS FOR A PERIOD OF A WEEK OR MORE WITH OBSTRUCTIONS OF THIS TYPE, IT OFFERS EXCEPTIONAL OPPORTUNITIES FOR MOSQUITO BREEDING

in various ways to indicate the species present. Colored pin markers on a wall chart are very serviceable. A field chart would have to be marked otherwise.

Details of men may be designated to look after the leveling of ground where water is apt to gather and remain, and to fill up small puddles, pools, hoof-marks and ruts which serve no useful purpose and where drainage is inadvisable. Holes in trees should be filled up with cement. Stumps which hold water should be grubbed out and the stump holes filled. In rocky streams pot-holes in the rocks often breed many mosquitoes. If possible, the rock should be grooved or removed, or the holes may be filled with cement.



WESTFIELD, N. J., WIPED OUT A MOSQUITO-BREEDING SWAMP ON THIS SITE BY FILLING IN WITH TOWN ASHES

Other details may be designated to clear stream beds and drain lowlands. Spring lands, bogs and swamps furnish an abundance of mosquitoes and are the first places to receive the attention of the ditching squads. Ditches must be constructed to carry off standing water. These should be laid out by an engineer. The ditches must have straight banks and even bed and must be kept free of vegetation. Sometimes it is necessary to spray the vegetation along the ditches with oil and burn it. All borrow-pits and puddles caused by grading roads and railways should be connected by a ditching system or filled. Flowing streams usually have trees along their sides, and under such trees water is often trapped to form a quiet, undisturbed place for mosquito larvae. Trees must not grow on the edge of the bank. Tree roots must be removed from the stream. Any kind of vegetation growing in the bed of a stream favors mosquito breeding, as it affords some protection against natural enemies and prevents adequate artificial control. The banks must be straightened and without overhanging ledges. There should be no obstruction to the free flow of the stream. If it meanders, a new and straight curve ought to be constructed and the old course filled. Springs which furnish good water should be boxed and protected.

Large bodies of water in which dense growths of grass and weeds occur furnish great problems in many localities, and in tropical countries especially, where feasible, it is often desirable to furnish the mosquito squad with two motor boats and submarine saws or other implements for cutting and removing vegetation. If this cut vegetation remains, it aggravates the situation. Large lily leaves which when alive furnish no place for breeding will often, when dry, form cups for water in which mosquitoes breed prolifically.

Constructing Drainage Systems

The construction of drainage systems should be done preferably by a sanitary engineer who understands the mosquito phases of the problem. The main ditches should be constructed first, and the laterals added later. Sometimes where weed growth is rapid, it is desirable to have a double parallel series of ditches, one only operating at a time except during heavy rains, so that the idle ditch can be cleaned and shaped up. It is essential that the floor level of the ditch afford no opportunities for puddles to form after the greater part of the water has passed off.

In permanent ditching it is sometimes



A TWO-MAN SPADE IN USE CUTTING NARROW DRAINAGE DITCH IN A NEW JERSEY MARSH

feasible and advisable to line the ditch with concrete, or at least to line the bottom. Weep-holes should be made at sufficient intervals to carry into the drain water which gathers on the outside of it. Branch ditches should enter the main ditch at an acute angle or on a curve. At the junction of ditches there should be a splash wall to confine the water within the ditch. Pot-holes formed in dirt ditches should be filled up after rains with gravel or stone and tamped hard.

In certain soils where seepage water outcrops abundantly on hillsides, it is sometimes practicable to install an intercepting tile drainage system. The tiles are laid at right angles to the flow of the seepage at the highest seepage water level, with a space of one-eighth to a quarter inch between joints. The grade of the trench bottom must be true. Tiles must not be located on soft mud where they may sink. The outlet should be well above the ground surface.

Dr. C. W. Metz has set down certain very valuable principles in drainage, and describes the methods of surface and vertical drainage used by the Public Health Service. The treatment depends upon the sources of the water. The methods described above will suffice for rain water. For seepage water where tile drainage is not to be used the ditches must be dug at right angles to the flow of the seepage water, that is, across the exposed end of the water table. These ditches may be connected to main ditches which will carry the flow down the hillside parallel to the seepage flow. If the water table is too deep to be intercepted by one ditch, it may be necessary to dig additional intercepting laterals at intervals lower down. A swiftly running ditch is better than a sluggish one. Water confined in a narrow channel will run more swiftly, give less surface and be easier to oil, hence V-shaped ditches are usually preferable to wide-bottomed ones. The shape of the ditch will largely depend upon the nature of the soil. Where wide ditches are apt to form puddles in dry seasons, a small V-shaped ditch the width of a shovel may be made down the middle of the large ditch.

Vertical drainage consists of sinking wells to conduct the water thru relatively impervious soil into water-bearing sand or gravel. Such drainage is advisable only where surface drainage is difficult or expensive. In case the underlying stratum is deep down, holes should be bored and drain heads installed. The drain head will consist of a culvert-like box at the level of the bottom of the lake or pond, which will conduct the water to the well. The receiving end will have a coarse screen and a fine screen to keep out débris. The other end of the culvert is closed. Over the well will be a hole about one-fourth or one-third the diameter of the well, and this likewise will be covered with a screen. A pipe or funnel from the hole in the culvert into the well will reduce washing and crumbling of the sides of the hole. Soft soils will require that the well be cased with tile or iron pipe.

Any one engaged in marsh drainage should familiarize himself with the methods in vogue in the great salt marsh drainage work of the state of New Jersey.

When ditches become matted with algae and other matter and contain mosquito larvae, in some localities it is possible to construct water gates to permit temporary impounding of water, which will enable the ditch squads to thoroly flush the ditch below the gate and remove all mosquito larvae and algae.

Larvicides

The ditching, draining and clearing of waterways insures a regular flow, carries off all surplus water, and reduces but does not prevent mosquito breeding. It is necessary to use some additional means of control, and for this purpose various larvicides have been applied, principally kerosene, crude oils of paraffin and asphaltum base, as well as creosote oils.

Freeborn and Atsatt have set down a number of requirements for a good larvicide:

1. It shall be highly poisonous, so that a small quantity may suffice for a large volume of water.
2. It shall kill rapidly in order that subsequent dilution and weakening by rain may have as light effect as possible.
3. It must be uniformly deadly and capable of standardization.
4. It should mix freely with brackish and alkaline waters.
5. It must be harmless to man and domestic animals, when in the dilution necessary for larvicidal action.
6. It shall not be susceptible to rapid deterioration.
7. It must be inexpensive.

They did not find any substance which fulfilled all these conditions, but found a soap, now known as the Panama larvicide, to meet most of their requirements. This was made of the following ingredients:

Resin	150 to 200 pounds
Soda	30 pounds
Carbolic acid (sp. gr. 0.97)	150 gallons

This makes a liquid soap which freely emulsifies with fresh water. The carbolic acid must have at least 15 per cent of phenols and no greater specific gravity than 0.97.

This larvicide is manufactured as follows:

Heat the carbolic acid in a steel tank with steam coil. When steaming hot, add the resin and continuously stir the mixture by means of a paddle agitator until complete solution is effected. Dissolve the caustic soda in 6 gallons of water and add to the mixture. Heat and stir for five minutes. Draw a sample and pour into water. If it emulsifies, the process is complete, and the product may be put into shipping drums, which must be tightly closed.

Oiling

There are many ways of applying the oil. The most common method is by knapsack sprayer or, where the ditch is along the road, by horse-drawn tanks fitted with a spraying bar. For slow-moving water and



DREDGE BOAT RIGGED WITH ORANGE PEEL BUCKET CUTTING CHANNEL 13 FEET WIDE IN MEADOW, NORTH ELIZABETH, N. J.

stagnant water as well as the treatment of ruts, puddles, hoof-prints, etc., these methods are satisfactory. Dr. Metz found that he got excellent results in boggy lands, especially by applying a thin mist of commercial creosote. A very small quantity will kill mosquito larvae.

For moving water there are many devices for maintaining a regular dripping of oil from a suspended vessel upon the surface of the water. Such devices can easily be rigged up by any practical man. Dr. M. J. White of the Public Health Service modified this method by conducting the oil to the water by means of a wick.

The war has brought about the new and even more efficient methods of oiling which have been developed along many lines at Quantico, Va. It was found that sawdust impregnated with crude oil will hold the oil for a long time and will slowly give it up to the water. The sawdust impregnated with oil is placed in a box and sunk in a flowing stream; or a few grains of sawdust are thrown in a hoof-print, or a handful on a puddle; or a floating boom is arranged to hold back of it a quantity of sawdust and give off a constant film. Thus for each condition with a slight modification of the

application, an excellent and lasting film which is not destroyed by rains is obtained. Dr. Metz modified this method by putting the oil-soaked sawdust in bags which he fastened to the bottom of streams. Probably no other system of oiling is as adaptable or as satisfactory as this sawdust method.

Dr. Ebert developed an automatic oiler consisting of a cylinder sunk beneath the water which takes in water and displaces the oil, the amount of displacement being regulated by spigots. This oiler dropped under a bridge in a big river or placed in a large tidal bay amidst rank vegetation produces a constantly renovated film of oil which is very effective. The size of the cylinder is gaged by the size of the stream. The distance apart at which the cylinders should be placed must depend upon the film.

Artificial Containers of Mosquito Larvae

In mosquito work much attention must be given to all types of artificial water containers, as rain barrels, cisterns, latrines, tin can dumps, garbage cans, gutters, water pitchers, flower vases, aquaria, table isolation receptacles in tropical countries, cesspools, sewers, toilets and flushing boxes, traps in sinks, drinking fountains and water troughs. Flushing, periodic emptying, covering with oil film, stocking with fish, are among the possible expedients available in one or another of the cases. A new treatment has been devised for water in fire barrels and water tanks used for storage of water to be used in cleansing cans, in each of which cases oil is very undesirable. These receptacles may be treated with borax.

Fish as Mosquito Control

Among the principal natural enemies of mosquitoes are fish, and in permanent ponds and lakes and streams the stocking with the proper species of fish may be considered as one of the most satisfactory methods of mosquito control. In this country top minnows and gold fish are commonly used for this purpose.



SPILLWAY OF THE CROTON DAM, NEW YORK CITY WATER-WORKS

FORWARD STEPS
REPORTED TO THE AMERICAN CITY BY MUNICIPAL OFFICIALS & DEPARTMENT HEADS

For this department the editors will welcome short articles from city, town and county officials and heads of departments, on subjects of interest and practical value to others engaged in similar work. Photographs, plans, or other illustrative material, should accompany the articles whenever available.

MAYORS

An Opportunity Farm

TOLEDO, OHIO.—On the University Farm, Toledo expects soon to provide a vocational school for boys who are capable of making use of opportunities which may be offered to them. It will not be primarily a home for delinquent boys,—altho boys who are in danger of becoming delinquent will be welcomed there,—nor will it be a home for boys who are mentally subnormal or feeble-minded. The Opportunity Farm will carry no such reproach. It will be a school to which boys can go with a feeling of pride, a school toward which they may feel gratitude for the opportunity it gives for the self-advancement denied them by home conditions.

In brief, the new brick building recently completed at the University Farm will be converted into a home and school for the boys. It will be operated and maintained with University funds. Training in different trades will give the boys an opportunity to obtain practical experience in agricultural and other vocational work. The farm will be developed as an adjunct to the school, and in addition to providing the means of experimenting with agricultural tools and methods will also furnish food products for the home.

Boys will be admitted to the school upon application approved by the Judge of the Juvenile Court, or other competent authority. In some measure, the Toledo school will follow the pattern of the Mooseheart school, maintained by the Loyal Order of Moose in Illinois. Here boys are given instruction in farming, printing, plumbing, carpentry, electric wiring, painting, machine-shop practice and drafting; and when a boy has chosen the vocation in which he wishes to specialize, he is given more intensive training along that line. The result is that when the boys leave school they are well equipped to do some kind of practical work. They are self-reliant and resourceful. They know what they can do and accordingly have confidence in themselves. They have had a real start towards success. Moreover, they have been taught self-respect, for they have been made to feel while at school that they are earning their way, doing actual worth-while work which lifts them out of the class of objects of charity. They are members of a community, not inmates of an institution. This is the kind of school Toledo expects to establish at the Opportunity Farm.

The large brick building will be partitioned off and used for living-rooms and classrooms. The frame barracks will become the gymnasium, and the long frame building, formerly used as a machine shop for the soldiers trained there, will become the stables for the cows and horses needed on the farm. All told, 120 acres of land are available for cultivation, and from present indications the project will be in operation before the end of the season.

CORNELL SCHREIBER,
Mayor.

CITY MANAGERS

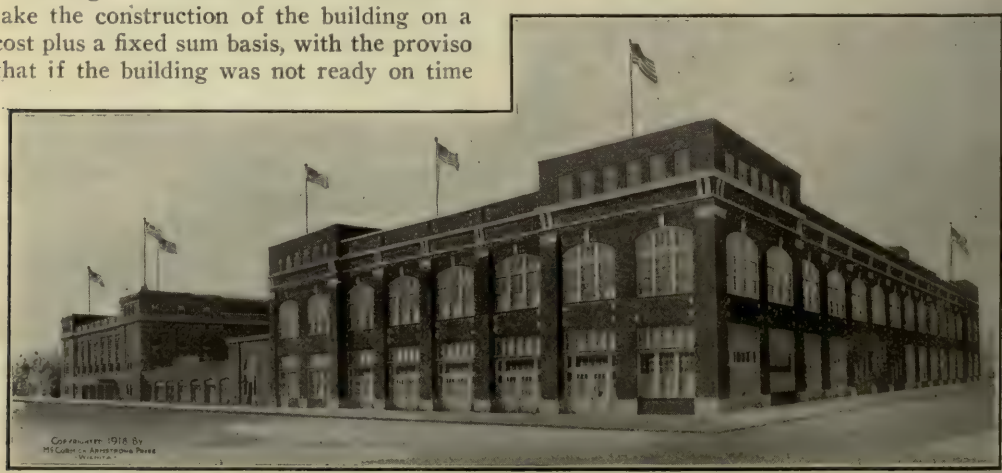
Municipal Exposition Building and Forum

WICHITA, KANS.—On April 3, 1917, the citizens of Wichita voted $200,000 worth of bonds for the purpose of securing addi-

tional grounds and for erecting a building which would serve as a market house and also for exposition purposes, particularly for the exhibition of live stock and agricultural products. Shortly after the new administration came into office, steps were taken to secure the deed to the property at the corner of Water and Williams Street, but an appeal was taken from the award of the condemnation jury and it was not until February 5, 1918, that the transfer was made. Because of tenants' rights there was an additional delay before the city could begin the work of removing the old buildings and constructing the new. Wichita was particularly anxious to finish this building during 1918, as the management of the International Wheat Show thought that unless this was done this enterprise, which meant so much to Wichita and vicinity, might not be continued. The ground cost the city $60,000, and the rest of the bond issue, $140,000, was therefore available for the building. This sum, of course, was not sufficient for the construction of the kind of building which the city desired, so it was determined to make the design adequate and to construct enough of the building to accommodate the 1918 exhibition.

Plans, specifications and estimates were prepared, and bids asked for, but no bids were received, as contractors refused to undertake the building for a fixed sum or to give a bond to have it completed by October 1. The City Manager was thereupon directed to proceed with the construction. After long negotiations, he succeeded in finding a contractor who would undertake the construction of the building on a cost plus a fixed sum basis, with the proviso that if the building was not ready on time the contractor would, at his own expense, put on a temporary wooden roof to house the International Wheat Show. Quotations on cement, steel, brick, and other materials were immediately accepted to expedite the work, to insure deliveries and to protect the city against rapidly rising prices. In this way a great saving of money was effected, and the material was contracted for before the embargo became so stringent as to prevent getting it at all. By pushing the work to the utmost, the building was ready for the Wheat Show on October 1.

It may be worth mentioning that the authorities at Washington considered the Wichita Exposition of sufficient importance, in its bearing on food and other war problems, to cause them to encourage the enterprise and to offer every facility for proceeding with the exposition as usual. A number of changes and additions in the original plans added materially to the cost of the building as first estimated. Among these may be mentioned the elimination of the supporting columns for the balcony on the auditorium floor, the inclusion of panic bars and automatic stops and checks for all doors, a gridiron and skylight over the stage in the auditorium, linoleum on the ramps, complete hand-railings around all openings, chairs for the auditorium, permanent wiring and additional electric fixtures, and a concrete floor provided with conduits for water gas, sewage, etc., all of which added about $42,000 to the original estimate, making the total cost $172,444.49. The additional funds, over and above those pro-



NEW MUNICIPAL EXPOSITION BUILDING AND FORUM, WICHITA, KANS.

vided by the bond issue, were secured from unappropriated funds in the city treasury, and by making additional changes a charge against the 1919 budget. These changes brought the total cost to $187,194.05, or less than 8 per cent in excess of the original estimate. This was deemed a fairly satisfactory result, considering that the work was done under rush orders and on a very rapidly changing market.

The structure is fire-proof thruout. It covers an area of 150 feet by 301 feet, or more than one acre. The ground floor is for exhibition purposes only, and the second floor contains an auditorium with a capacity of 2,300 persons and a space that may be used as a banquet room. Space for ample toilet rooms, retiring-rooms, kitchen, office lobby, etc., has also been provided, and in the front of the building are two rooms on the third floor, each 40 by 40, which may be used by the caretaker or for storage. The building is heated by a hot-air plenum system. The erection of this building makes it easy for Wichita to compete with any city in the Kansas district for the International Wheat Show, the Kansas Live Stock Exposition and the Thresher and Tractor Show, a trio of expositions that are worthy of the best facilities that can be provided in the state.

This is an example of what can be done by a municipality wishing to secure adequate exposition facilities, in the face of apparently insurmountable difficulties.

LOUIS R. ASH,
City Manager.

CITY ENGINEERS

A City Boulevard Upon An Abandoned Canal Site

SCHENECTADY, N. Y.—The city of Schenectady has lately acquired title, from the state of New York, to the abandoned Erie Canal lands running thru the city, and proposes to construct a cross-town boulevard upon this property.

The proposed boulevard will run from the plant of the General Electric Company to that of the American Locomotive Company, and will be used largely by employes of these two concerns. It will be about 150 feet wide, extending from the General Electric Company's plant for about 2,000 feet to State Street, the main street in Schenectady. This portion of the boulevard will be laid out with parkways in the center 26 feet wide, two roadways 42 feet in width, and sidewalks on both sides 20 feet wide. The tracks of the Schenectady Railway Company will be placed upon each side of the parkways, and the trolley wires will be suspended upon brackets extending over the road from combination lighting poles erected near the edge of the parkways. From State Street to the plant of the American Locomotive Company, a distance of about 3,000 feet, the street will be approximately 80 feet in width, with trolley tracks in the center, but no parkway.



BED OF ABANDONED ERIE CANAL, WHICH IS BEING FILLED IN TO PROVIDE BASE FOR NEW BOULEVARD, SCHENECTADY, N. Y.



AS THE NEW BOULEVARD ON THE SITE OF THE OLD ERIE CANAL BED WILL LOOK AT NIGHT, SCHENECTADY, N. Y.

W. D'A. Ryan, Director of the Illuminating Engineering Laboratory of the General Electric Company, and his assistant, Captain Gosling, have designed the lighting effects for the proposed boulevard. It is expected that the portion running from State Street to the General Electric Company, containing the parkways, will be one of the finest streets in the state.

The city is at present constructing sewers and filling in the canal prism, and will probably let the contract for completing the paving and other necessary work late in 1919.

Thru the kindness of the General Electric Company and the American Locomotive Company, which together donated nearly $250,000,—the purchase price,—the city was enabled to buy from the state the land for this improvement, without having to issue bonds. The filling, paving and final work on the street will be paid for by the adjoining property owners.

This improvement will open up a number of fine building sites which will add to the beauty of the city, and it will extend the business street toward the General Electric Company's plant.

The work is under the direction of the Commissioner of Public Works, Storrs M. Bishop, and the City Engineer.

It would be well for other cities to consider using abandoned canals or railway rights of way in a similar manner, for the day has come when unsightly and abandoned thorofares cannot be tolerated.

LEWIS B. SEBRING,
City Engineer.

- WATER - DEPARTMENTS

Electric Street Railway Built, Owned and Run for Water-Works

Minneapolis, Minn.—The water department of Minneapolis has built and operated an electric street railway for its own convenience and economy. The original filter plant was completed in 1913 and is located some six miles distant from the city. During construction work, materials were delivered by team or truck from a point one and one-half miles distant from the plant, where car-load lots were sent out on a third track. After the operation of the plant began, all supplies, including coal and alum, were unloaded at this point and hauled by teams or trucks to the site of the plant.

The long haul and the heavy grade which was encountered proved expensive. The continuance of this method of bringing supplies to the plant in these times of increased wages for teams and labor was considered rather extravagant by the officials. When the increase in the capacity of the old plant was undertaken, it was thought advisable to build an electric railway to the plant, not only for the purpose of transporting car-load shipments to the works, but also to carry the employes and laborers to and from the plant. A serious consideration

of this project showed that the operation of such a railway would probably go a long way toward paying its own cost as well as decreasing the cost of operation, and would prove a convenience to the operators of the plant. The line was constructed and has been in operation for over a year with great success. The total length of the line is 8,000 feet, with an additional 2,000 feet of third tracks. The rolling stock consists of one electric car, which is operated by current purchased from the local street railway.

The track terminates at the head house of the filter plant, where deliveries of coal, alum and other supplies can be made direct to the bunkers and bins. A third track has been built here to enable electric cars to pass around the trailers and thereby be released for other work while the loaded cars are being emptied. The electric car is used on regular schedule for the transportation of the filter plant employes, and at times when the regular shift is at work in the plant the car handles freight shipments. Because of the grade and the sharp curves on the line, the electric car can bring up only one trailer at a time, altho several cars can be returned empty on the down grade. The construction work was done by the Water-Works Department under the direction of F. W. Cappelen, City Engineer, by day labor, except the laying of the rails and the stringing of the trolley wire and feeder cable, which was done by the street railway company.

At the present time passenger traffic is limited to water-works employes, who travel without charge. When the present construction work at the plant is completed, so that the car can be released for regular scheduled trips, general service may be instituted, including transfer privileges with the street railway company to take passengers to the city.

J. A. JENSEN,
Superintendent of Water-Works.

CITY CLERKS

Dog Licenses Yield a Profit

NEW BEDFORD, MASS.—The dog tax in Massachusetts is collected by the city and town clerks. The law provides that every owner or keeper of a dog three months old or older shall license his dog. Male dogs pay $2, and female dogs $5; a spayed female pays $2; a breeder's license, with the privilege of keeping five dogs, can be obtained for $25; for $50 a breeder can keep an unlimited number of dogs.

For several years New Bedford has led the rest of Bristol County in the number of dog licenses issued. In spite of this fact there seemed reason to believe that all the dogs had not been licensed, and this year it was decided to try an experiment.

Dog licenses are due, by law, on or before April 1. About the middle of March, this year, the City Clerk furnished the acting Chief of Police with dog data cards, setting forth the following:

DOG DATA FOR CHIEF OF POLICE

Location; No.....st.; floor.....
Owner of dog:.....
Number of dogs kept and brief description:....
.....
Whether licensed in 1918?.....
(Yes or No.)
Date of first call and notice to license:.....
Date of second call:.....
If licensed?.....
(Yes or No.)
Remarks:—

Signed by
.....
Station.....

Instructions to the officers were printed on the reverse side of the card.

The scheme worked finely. On the Saturday before the first of April the City Clerk's office was crowded all day long with dog owners, some bringing their dogs and some without, but all seeking dog licenses and tags. During the year from December 1, 1917, to December 1, 1918, the money taken for New Bedford dog licenses amounted to $6,620. On the 5th day of May, when this is written, the amount already taken in is $8,451, and in reality the season is only just begun.

The police have finished their second round, and the dog owners are still headed for the City Clerk's office.

No such dog days were ever seen in New Bedford before.

W. H. B. REMINGTON,
City Clerk.



NEW LOCKER AND REST BUILDING FOR GOLFERS, PHALEN PARK, ST. PAUL, MINN.

PARK DEPARTMENTS

A New Club House for a City Golf Course

St. Paul, Minn.—The public golf course at Phalen Park, St. Paul, will be greatly improved this spring by the creation of a club house. The foundation has already been completed, and the superstructure is now being constructed. A commodious shelter building is planned, with 68 lockers, separate showers for men and women and a spacious rest room for women. The building occupies a space of 33 by 70 feet. A large porch across the entire front of the structure will afford a shady space where those who use the links may rest comfortably between rounds. The large piers supporting the porch are to be of yellow limestone, and the exterior walls will be covered with brown stucco with rough-sawed half-timber work in the gables. The roof will be shingled in variegated shades of green. The accompanying picture of the club house was drawn in the city architect's office, and gives some idea of what the structure will look like when completed.

It is planned to charge $5 per season or $2 per month for each locker, and a large majority of the players have petitioned the Park Commissioner to charge a fee of 10 cents to occasional users of the course not having lockers.

St. Paul's public golf course has proved very popular since its opening in August, 1917. The nine-hole course of that date was enlarged in 1918 to eighteen holes. The number of players during last season was 47,000, which is a most convincing testimonial as to the popularity of the game. The addition of an attractive club house should effect a most beneficial influence upon the social life of the golfers, and should also attract still more men and women this season to a sport beneficial to both body and mind.

J. M. CLANCY,
Commissioner of Parks, Playgrounds and Public Buildings.

PUBLIC SAFETY DEPARTMENTS

Auto Pound for Traffic Violators

Columbus, Ohio.—The City Council of Columbus has established an automobile and vehicle pound by an ordinance which went into effect about the first of December, 1918.

Our traffic ordinance prohibits double parking, operating machines at night without proper lights, crossing improperly at intersections, going to the left side of the street in seeking to get around vehicles in front, and also makes restrictions as to speeding. In all these minor violations the practice had been to put a card on the steering-wheel of the machine violating the ordinance, or to give the card to the operator if he were there, requiring him to appear at the police station at a certain hour. The result was that the offenders exerted themselves to have public authority abandon the prosecution of cases. It was

fast becoming a prevalent method of settling these matters.

The vehicle pound ordinance provides that machines offending in these ways be taken to the pound by the officer and that the machine cannot be taken out of the pound without the payment of $3 pound charge for the first 24 hours and 50 cents a day thereafter.



VEHICLE POUND, COLUMBUS, OHIO, WHERE TRAFFIC VIOLATORS FIND THAT IT TAKES LESS EFFORT TO OBEY THE LAW THAN TO GET THEIR VEHICLES OUT OF JAIL

The ordinance had the desirable effect sought, namely, recognition of the prohibitions involved in the traffic code. The first month the pound was in operation some 330 machines were brought in. Since the first of January, not one-fifth of that number have been brought in monthly. Operators of machines are far more watchful to avoid violating the minor provisions of the traffic code.

The weakness, however, is this: Under our traffic code, machines are required to have one red tail light from sunset to sunrise. If the light is out, the ordinance is violated. Accidental outages are not unknown. Occasionally mischief-makers among the boys would cause outages for which the operator of the machine was not to blame, but this could not be known by the patrolman. The result was that occasionally machines were taken to the pound and held for the $3 charge, which seemed to the owner and to us an injustice. Under the ordinance the operator could pay the money under protest; the officer would then file an affidavit, and if the Court found the operator innocent the money would be refunded. But the Court could not find the operators innocent if the lights were out, and so they could not have their fees refunded. This made a certain amount of friction, which could hardly be corrected, however, without opening the gates for the guilty as well as for the innocent.

The Columbus Automobile Club has objected to the ordinance because of this condition, but Council has not repealed it or amended it as yet. We are not seeking to make the pound ordinance a money measure, but to make it the means of enforcing these minor prohibitions of the traffic code. It has done much to clean up the situation regarding lights, to prevent double parking in the street, to provide open spaces for transient traffic and access to places of business, and to enforce the rules where the time for parking is limited.

A. J. THATCHER,
Director of Public Safety.

Reports Should Be Properly Labelled

Recently there came to the office of THE AMERICAN CITY a very interesting report of a fire department. It was nicely printed and well arranged except for one thing. The first mention of the city to which the report referred appeared on page 24. Moreover, this was the only mention, and it took two of the editors fully ten minutes before they were certain that they had identified the source of the report.

Modesty is a becoming virtue, but city officials who send forth good reports and fail to mention the names of the city and the state are like business men who advertise in glowing terms the wares they have to sell and then neglect to insert the name of the store. The heirs of such men usually try to break their wills.

The Cold Repair Method of Mending Roads

A New System of Maintaining Highways

WAR has passed rough-shod over our highways. From California to New Jersey and from Maine to Florida come reports of worn-out roads. Many will have to be resurfaced, some will have to be rebuilt, but a great many can be repaired.

To properly repair their worn roads, New York and other states are using an asphalt emulsion known as cold repair cement, which is missible with water in all proportions and is applied cold. Most successful results have been obtained by the use of this emulsion, which requires no complicated machinery and demands only the simplest road-building knowledge.

An example of this method of road repair is found on three highways in western New York, comprising about two miles and carrying the heaviest traffic found in that section. These highways were repaired with cold repair cement in 1917 and are in excellent shape to-day, having withstood the increased war truck traffic without damage.

The methods employed on all three jobs were practically the same. All holes and ruts were cleaned out and the sides of the holes were cut vertical. These depressions were filled with No. 2 stone and cold repair cement, thoroly mixed in an ordinary concrete mixer, using approximately 1¼ gallons to the cubic foot. The filling was then thoroly tamped. A binder course of No. 2 stone and cold repair cement was spread evenly to a depth of approximately 1½ inches and allowed to lie exposed until evaporation was completed and the color of the emulsion had changed from a dark brown to black. The length of time for drying out varied according to the weather and temperature, and was anywhere from two to six or seven hours. A thin course of clean, well-screened stone, approximately ¾ to 1 inch thick, was then spread over the surface and allowed to evaporate, and the whole was rolled lightly, just enough to place the material. The following day it was rolled once more and covered with dry screenings.

In placing the final mix it was found that No. 1 slag was just as good and a little cleaner than small stone. It was found, also, that one of the essential things to watch was the amount of emulsion used, the tendency being to use too little.

The principal advantage in using this asphaltic compound, aside from its tenacious binding quality, is the ease with which it can be manipulated, and the ab-



MIXING COLD REPAIR CEMENT AND STONE IN A MACHINE MIXER



FILLING RUTS ON A ROAD WITH COLD REPAIR CEMENT

sence of elaborate engineering details and machinery.

The emulsion is shipped from the asphalt refining plant, in hardwood barrels, to the road where the work is going on, and used as needed. The emulsion is dark brown in color and about the consistency of thick cream. It may be mixed with the stone either by hand on a mixing board or in an ordinary concrete mixer. This operation is very simple and requires merely a watchful eye to make sure that all the stone is thoroly coated with emulsion. It is a simple matter to correct errors in mixing. If too much emulsion is in the mixer, throw in some more stone, and vice versa.

When the mixture is placed on the road it changes gradually from its brownish color to deep black, as the water in the emulsion evaporates, leaving the black asphalt binder. Being missible with water in all proportions, this cold patch cement may be mixed with wet or dry stone, a distinct advantage and time-saver in road repair work.

A synopsis of the character of the New York road work follows:

REPORT ON RESURFACING ROAD NO. 83
Sta. 237-276

Width, 16 feet—6,933 square yards.

Thickness, 2 inches in place.

Bituminous material used, Barber cold patch cement.

Stone used, local crushed limestone.

Road, water-bound macadam, built in 1902, resurfaced with Rocmac pavement in 1910. Condition of road at time of resurfacing, full of holes from 1 inch to 4 inches deep, very rough.

Work consisted of repairing all holes before laying pavement, the building of shoulders, and, after pavement was laid, reshaping and cleaning of shoulders.

REPORT ON RESURFACING ROAD 5252—1918

Length, 3,141 lineal feet; 14 feet wide; 2 inches thick rolled; 4,886 square yards.

Bituminous material used, Barber cold patch cement.

Stone, Geneva limestone, hauled 5 miles by trucks.

Slag, hauled from Geneva, 3¾ miles, by force account.

Road is a second class concrete with surface treatment of bituminous material top and screened gravel. Surface was all worn off excepting near the edge, and concrete was very rough.

Work consisted of removing loose old top with grubs, resurfacing concrete with 2-inch top C. P. A. E. mix method, restoring shoulders and ditches.

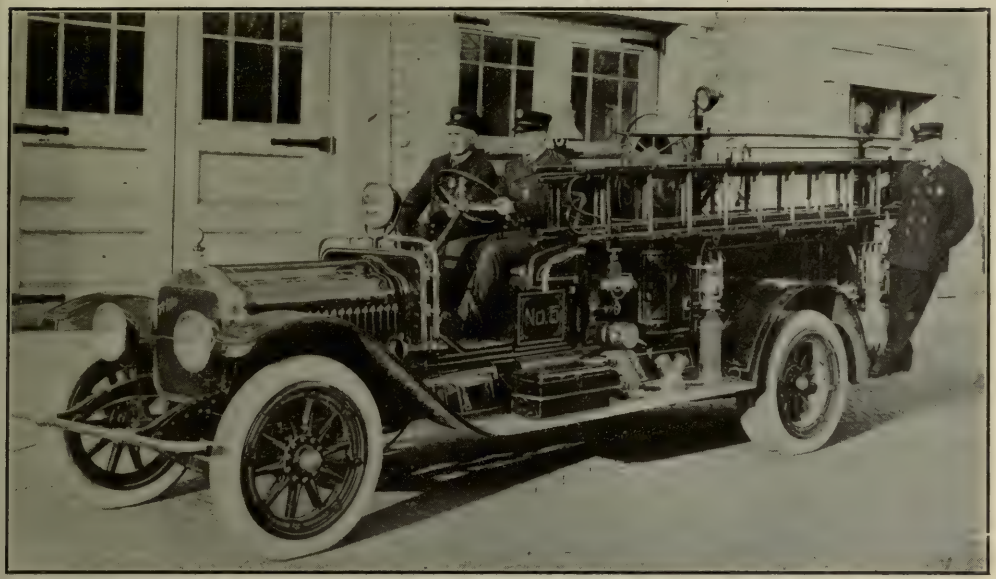
Varied Capabilities of the Motor Truck in Public Work



A GMC MOTOR TRUCK HANDLING PIPE ON A RUSH JOB



INDIANA MOTOR TRUCKS WITH TANK BODIES AND SPRINKLER ATTACHMENTS FOR U. S. A. CANTONMENT



A WHITE TRIPLE COMBINATION PUMPING ENGINE WITH AN INTERESTING HISTORY, IN SANDUSKY, OHIO

Just a few hours before the above piece of apparatus was delivered to the city of Sandusky, Ohio, and before there was any opportunity to make an official acceptance test, a disastrous fire broke out in the business section of the town. The new pumper arrived in the morning, and that night, when conditions were at their worst at the fire, it was rushed into service. The engine worked admirably. The next day it was given an official test solely as a formality, as the city officials were more than satisfied with its operation the previous night.



FINAL TEST OF AN AMERICAN-LA FRANCE ENGINE BEFORE THE IMPERIAL PALACE, TOKIO, JAPAN

Why Motorize Fire Departments?

Data from Wilkes-Barre, Pa., Give Good Idea Why Agitation for Motorization Is Increasing Thruout the Country

THE value of motor-driven vehicles in fire department service in Wilkes-Barre was first acknowledged in 1909, when the Fire Chief was provided with an automobile to replace the horse and buggy which he had been using in responding to alarms. It became evident that it cost less to use the automobile than the buggy and that the efficiency of the former was much greater. As soon as this fact was fully understood, the motorization of the entire fire department began, and the newspapers kept the taxpayers informed of the change and its advantages. In 1910, a Pope-Hartford combination truck was purchased. It proved so satisfactory that in 1913 three additional motor vehicles were installed. At present there are only two horse-drawn pieces of apparatus in the department. It is expected that by the end of 1919 these will be replaced by motor-driven apparatus.

Detailed records of the cost of operation and maintenance of fire apparatus have always been kept by the Wilkes-Barre Fire Department, so that it has been possible to study accurately the relative expense of using horse-drawn and motor-driven fire apparatus in this city.

The cost of keeping horses in 1915 was $3,705.11. This, compared with $589.11, the cost of the motor equipment, shows a saving of $3,116. At that time there were 16 horses in use and 13 pieces of motor apparatus, but in spite of this difference in number, which would favor the horses, the cost of operating the motors was only about one-sixth the cost of using the horses. In order to determine even more in detail the saving between keeping a team of horses and a piece of motor apparatus, the bureau kept a record of the expense of the hardest-worked team and the most-used motor apparatus. The team cost $38.60 per month, or $463.20 for the year (1915), while the cost of the truck tractor for that entire year was $15.66. Full appreciation of such a record as this must necessarily speed up the rate of motorizing a city's fire department. However, this is not the only point which strengthens the position of the advocate of motorization.

Speedier Response to Alarms Reduces Fire Losses

The instant an alarm is received the engine is started and the apparatus is on its way to the fire at a speed much greater than can be attained by horse-drawn vehicles and without the heart-straining run of the horses. As soon as the machine arrives at the fire various chemicals can be used, thus checking the blaze promptly. As a direct result of this speed, the fire losses in Wilkes-Barre have decreased until they are less than 66 cents per capita per year, which is about the lowest for any city of this size.

The saving thru the smaller number of men required in operating modern apparatus is no small item. With the horse-drawn steam engine a driver was needed, also an engineer to take care of the engine, and a stoker to keep the fire up. With the motor apparatus, the chauffeur runs the engine and the pump, and the other two men are free to fight the fire, thus greatly increasing the effectiveness of the organization.

Not Necessary to Feed Motors

The low maintenance cost of motor equipment is one of the greatest factors in the economy of a fire department, as the apparatus does not have to be fed. With the horse, however, money is continually being spent for bedding, feed and grooming, whether the horse is in active use or not. At times the apparatus, particularly the larger pieces, may not be called for months. During this time only a gallon of gasoline per month will be used in a piece of motor apparatus when it is run for a few moments each morning to make sure that it is in good condition. With the horse it is different: he must be fed every day or lose his value as a means of hauling apparatus to fires. With the present prices of feed, it is not difficult to appreciate the great expense of maintaining horses.

The records of the department in 1916 show that the cost of maintaining only five pieces of horse-drawn apparatus, including all necessary purchases, is $3,008.57, while the expense for maintaining fourteen pieces

of motor apparatus, including all supplies, was $1,852.82, which is $1,155.57 less than the cost of caring for the five horse-drawn vehicles. Incidentally, figures relating to the horse-drawn apparatus did not include wear and tear on the floors and stalls.

In 1917, after a part of the motor apparatus had been in use for four years and consequently the depreciation had greatly increased, it was found that the figures for cost of maintenance and operation still favored the motorized equipment. It cost $2,786.68, or $23.22 per month per horse, to care for ten horses during 1917, while the charges against the fourteen pieces of motor apparatus were only $2,150.48 for the entire year. These figures included rebuilding an engine in one of the tractor-trucks. In analyzing these figures it must be remembered that ten horses represent practically five pieces of equipment and that the comparison is made between the cost of maintaining five of the older pieces of apparatus and the cost of maintaining and operating fourteen pieces of motor apparatus.

The following table shows the detailed statement of the cost of maintaining the ten horses and the fourteen motor fire trucks:

MAINTENANCE COST OF TEN HORSES

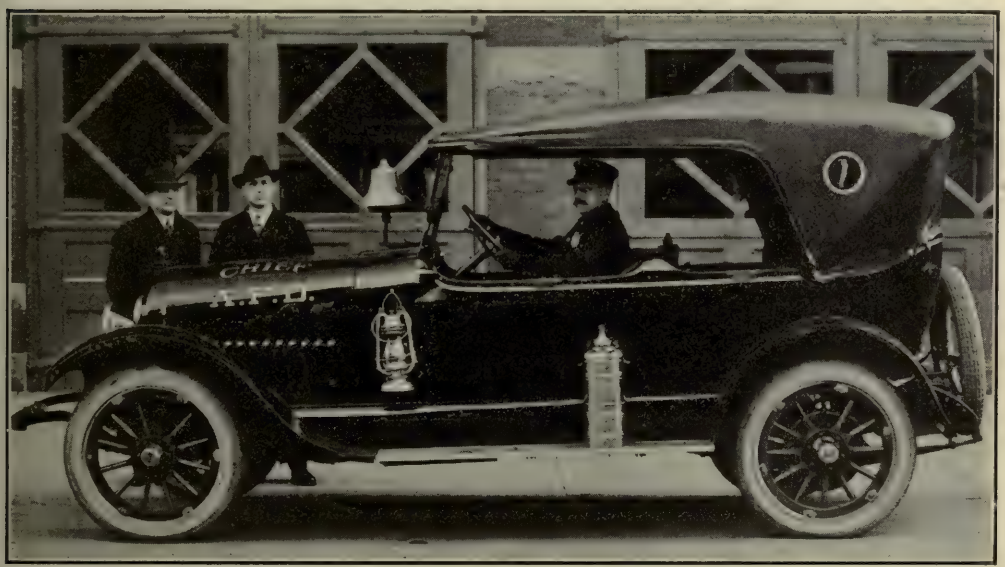
60,517 pounds of hay	$ 621.78
2,029 bushels of oats	1,507.95
17,916 pounds straw	160.98
400 pounds of bran	8.39
Shoeing	426.40
Veterinary services	34.50
Salt bricks	8.40
Harness repairs	18.28
Total	$2,786.68

FOURTEEN MOTOR FIRE TRUCKS

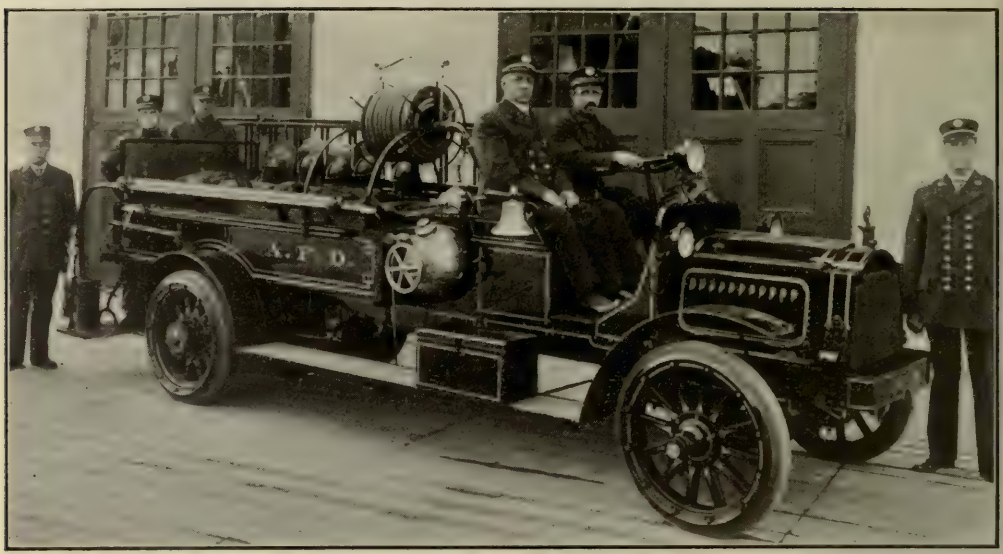
2,057 gallons gasoline	$ 489.48
Repairs, general	1,192.52
Rebuilding motor in No. 1 tractor	425.00
98 gallons cylinder oil	43.48
Total	$2,150.48

In operating a large motorized fire department, it will prove a great economy to employ an expert motor truck mechanic to make regular visits to different fire stations and carefully go over the different pieces of apparatus, thereby aiding the chauffeurs in their daily "grooming" of the motors. Because of his greater experience, the mechanic will be able to correct many possible incipient troubles.

The fourteen motor trucks traveled 5,427 miles during the last year at a cost of 32 cents per mile, which includes gasoline and oil used during the daily tryouts when the engines are run idle to test them. This is very reasonable in view of the fact that each of the trucks weighs over six tons.



A STEVENS CAR USED BY FIRE CHIEF KRANZLEY, ALLENTOWN, PA.
The equipment includes extinguishers, oil and electric lanterns, bell and Draeger smoke helmet



ALAMEDA, CAL., INCLUDES THIS PACKARD CHEMICAL IN ITS FIRE DEPARTMENT

When horses are used, there is an added annual expense of several hundred dollars for replacing the flooring of the station as well as the stalls, which are worn out rapidly by the sharp iron shoes of the animals. The floor of the station usually has to be replaced once each year and the stalls twice, which, because of the ever-increasing price of oak flooring, is no small item. With motorized apparatus this expense is practically eliminated.

The older members of fire departments which have been motorized generally appreciate the value of the new apparatus, but always confess that they miss the companionship of their old horses. This, while a most laudable sentiment, is not one which can ever keep horse-drawn apparatus in competition with the more economically operated, quicker-acting motorized equipment. More practical considerations demand modern apparatus.

Government Fire Apparatus to be Redistributed—Not Sold

There have been persistent rumors around the country for some time that the War Department intended to dispose of a large amount of fire apparatus which had been used at army camps, munition plants and arsenals during the war.

The Director of Sales, War Department, has issued a statement that none of this fire-fighting equipment, either motor-driven or otherwise, will be for sale. The army camps, munition plants and other properties operated by the Government during the emergency were not completely equipped with fire apparatus, and, owing to the fact that some of these camps and plants will be no longer maintained by the Government, a redistribution of fire apparatus among the remainder is being brought about. It is estimated that when the fire apparatus owned by the Government is distributed among the army camps, munition plants, etc., to be held by the Government that there will remain no fire apparatus of any kind for sale.

Representatives of the War Department, the Navy Department and the Geological Survey, in conference with the Director of Sales, decided that any department of the Government desiring materials which any other department of the Government may have to dispose of should have an opportunity of obtaining them, and that the method of selling should be controlled in such manner that different departments of the Government will not compete against each other in purchasing. Furthermore, all surplus not taken up by Government departments will be so disposed of as not to disturb industrial conditions in any part of the country.

Electrical Equipment in a Pittsburgh High School

Pittsburgh Believes in the Right of a Pupil to "Serve with Trained Hand as Well as with Trained Head"

By D. H. Colcord

F surroundings were the only essential in the training of boys and girls, then the work of the students at the Schenley igh School of Pittsburgh, Pa., would av-age something like one hundred per cent. ocated in the civic center of Oakland, the lucational and residence district of Pitts-rgh, this beautiful building occupies four res of ground with a commanding view Schenley Park. It is in the shape of an oceles triangle with a base of 468 feet and des of 250 feet, massive in appearance d severely plain, with no ornamentation cept the columns and frieze at the front trance. It is constructed of steel and con-ete built upon 1,700 concrete piles, faced ruout with Indiana limestone. The audi-rium, which occupies the center, is anked by open courts and surrounded by oad corridors, along which are the class-oms, laboratories, shops and lunch rooms. he courts light the auditoriums and class-oms. The building contains in all forty assrooms, eleven laboratories, eleven ops, four crafts rooms, seven domestic ience rooms, two music rooms, six com-ercial rooms, a large library, a girls' and boys' gymnasium, a swimming pool, re-ption rooms, rest rooms, and twenty ilet rooms—a total of one hundred and ghty rooms.

Schenley High School has a thousand oints of interest, extending from its itchen, equipped with the latest electrical ooking appliances, to its expensive repro-uctions of famous paintings. However, is article is confined to its electrical equip-ent, and especially to the power-driven achinery in its industrial departments.

A Wide Variety of Electrical Equipment

In the general office is installed a tele-hone switchboard which gives service to very room in the building. Here also is ie master electric clock which controls venty-seven secondary clocks thruout the school. The clock has a program attachment so arranged that 100 bells for assembly and dismissal are rung automatically at the beginning and end of each period. The auditorium has one of the finest lighting installations in the country, and is also equipped with a complete moving-picture booth. In the chemical laboratory is found every electrical device that is used for practical demonstrations, from ovens to motors and fans for removing fumes. The most striking features of the physics room are the switchboards of six panels, distributing electric energy to all sections of the department, a display panel board, auxiliary motor-driven tools, three kinds of lathes, band-saws, and electrical attachments for work benches. In the kitchen we find an electric potato-peeler, a chopper, a dish-washing machine, and a meat- and bread-slicer. In the bakery an electric motor drives a one-barrel dough-mixing machine and a three-speed cake-mixer. An electric proofing-oven is used for raising dough, and an electric bake-oven bakes forty dozen rolls at one time.

The power plant is as complete as can be found in any public building. The capacity of the boilers is 1,350 horse-power, fired by mechanical stokers. There are eight air washers to cleanse and humidify all the air in the building, the same apparatus being used to cool the air in the summer time. The forced draft is created by twenty-three Westinghouse motor-driven fans. For the exhaust there are two 25-horse-power, 230-volt motors, and four of the same type for the inlet. Eight 5-horse-power motors are used for carrying off the air in the kitchen, service room, laundry, lockers, closets, and laboratories. All the power current used is transformed to direct current thru two 300-kilowatt, 6-phase, 60-cycle, 1,200-R.P.M. rotary converters. Ordinarily the ventilation in the auditorium enters beneath the opera chairs and passes out thru the

Which type of Culvert do you prefer ?



WE make the Half-Round type of culvert from "Genuine Open Hearth Iron" and they can be readily used when the fill is not sufficiently heavy to permit the use of the right size of round riveted pipe for the capacity needed. The bottom sections can be had in lengths of 6, 8 & 10 feet, thereby giving a more rigid culvert than if the bottom were made of shorter sections. The top sections on the other hand are made in multiples of two feet.

HALF ROUND CULVERTS ARE JUST THE THING FOR CITY OR TOWN USE



ROUND Riveted Full Circle Corrugated Metal Culverts have come into almost universal use all over the country. Their value is well understood for general use on main highways; they are the best and are invaluable on secondary roads where the service demanded is much greater. Corrugated metal culverts made of any grade of material, are much more easily handled and installed than any other form of culvert construction; but where permanency has to be considered, it is well to have them of the best grade galvanized iron sheets that are on the market. Our "Genuine Open Hearth Iron" is the best. Send us your address so we can send you further particulars.

The Newport Culvert Company

NEWPORT 524 West 10th St. KENTUCKY

ceiling, but in case of a large audience this process is reversed and the air enters at the ceiling and passes out under the chairs. The switchboard in the power plant contains a six-panel board. The two panels at the right are the alternating-current panels for the lighting system, which is a three-wire system. The two panels in the central group are the power panels, on which are mounted the switches that supply the power tablet boards thruout the building. The two panels on the left have the following equipment: two ampere meters, rheostat, two main switches and two watt meters, and one volt meter for each panel.

Power-Driven Machinery in the Manual Training Department

The prime factor of the entire manual training department, which is located on the ground floor, is the electrical power that drives the machinery, changed from the alternating to a direct current in the power plant. It is carried to the machines in the metal and wood-working departments and applied to direct-current motors. Every lathe, every band-saw, in fact the entire machinery in these workshops, is driven by individual motors with no belting, or at least a very short direct drive. Think what this means in the way of protection for the awkward, irresponsible boy of freshman years: he is able to devote himself entirely to the operation at hand, and his attention is not diverted with the constant fear that his sleeve is going to be caught in a belt. It means something, too, to use only as much power as is required for the particular machine in use. With the old system, the entire floor had to be kept working in order to operate but one lathe; belts had to be run loose to avoid accident, and there was constant repair. Shafting and belting require oil cups, that often drip; in fact, they make the manual training room a dirty place,—and the fastidious high school youth dislikes to go back to the English classroom with a soiled collar and greasy trousers. The Schenley manual training shops are unusually free from the dirt and grime that collects in such places.

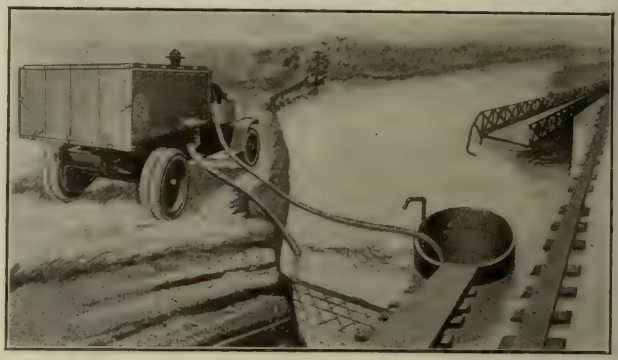
For the past year the metal-working department has been turned over to the soldiers who were encamped in Schenley Park, so that most of the high school shop work has been done in the wood-working department. This department includes two spacious rooms connected by the instructor's office, which opens into each room. The space back of the office and between the shops is used as a lecture and demonstration room, and contains an instructor's table and a small amphitheater. Each shop room is 36 by 80 feet, thoroly lighted with eight triple plate-glass windows, extending nearly from floor to ceiling.

The first requisite of a modern wood-working department is its machine equipment, and the Schenley has everything in this line that an instructor could desire. The upper half of each shop is given up to work benches. There are twelve in each room, all labeled numerically for the purpose of easy assignment. Each bench con-



A SCHENLEY HIGH SCHOOL BOY OPERATING A MOTOR-DRIVEN BAND SAW

Another reminder



The Otterson Auto Eductor

quickly and economically cleans catch basins, and privy vaults and unwaters trenches, also used for

Sinking Bridge Caissons

As shown in the illustration the Otterson Eductor may include this type of work in its rapidly extending field with its typical economy and speed.

Cleaning Grit Chambers

One of the mean jobs at a sewage treatment plant is cleaning the grit chamber. The Otterson Eductor can handle this quickly in addition to its other daily work.

Removing Septic Tank Sludge

This is usually a long tedious process but becomes speedy and minus its usual discomforts when done with the Otterson Auto-Eductor.

EQUIPMENT MOUNTED ON ANY 5-TON CHASSIS OF SUITABLE STANDARD MAKE

THE OTTERSON AUTO-EDUCTOR COMPANY

817 Fairbanks Building — Springfield, Ohio

tains twelve commodious drawers and two cupboards to hold tools, aprons, waste, etc., these drawers being classified by letters, as *A* and *B*. The top is covered with a heavy block of hardwood, 5 feet x 3 feet x 2 inches, to which are attached vises, whetstones, and electric glue pots. Each room also contains an instructor's cabinet and a glass-covered tool-case, both of which are built into the wall.

There are twenty-two wood-working lathes distributed thru-out each room. These are driven by headstock motors, and are not anchored to the floor but may be shifted easily from one position to another. They are used for turning, chucking and sanding everything from hall-trees to stocking stretchers. The motor has four speeds, no belt, and is absolutely safe and "fool-proof." The boys like to use these, because here is action.



BOYS WORKING ON JUNIOR RED CROSS WORK IN THE MANUAL TRAINING DEPARTMENT OF THE SCHENLEY HIGH SCHOOL

In the center of each room is a standard-size surfacer, driven by its own motor, the short belts completely guarded with wire screening and sheet metal frames.

Every machine in the Schenley wood-working shops is of standard size, i. e., it is the same make of machine that is used by any commercial industry of the kind in the country. This means that the boy who leaves the school has nothing to relearn, as is often the case when a "baby" model has been used.

The method the instructor has worked out for handling tools is interesting. Each boy keeps his tools in his own bench and is responsible for them during the period he works in the shop. At the close of the period, he is required to check them and report his check to the incoming boy who uses his table. The instructor assumes no responsibility except that he inventories the entire shop every month, and any tool destroyed or lost is charged against the last boy. One can see that no boy is likely to let the boy that succeeds him at his bench report tools missing.

Training the Hand

The general shop practice is similar to that of the average shop; however, there are a few features that are unusual and worthy of mention. One hundred sixty-five students are given instruction every day. Four years' work is given in manual training, the majority of boys carrying 100 hours of work each semester. One of the "hobbies" of the Principal is that every student in the Schenley High School, regardless of the course elected, must take one year's work in some study that trains the hands. The Principal believes that such training has a strong democratic tendency. The student is graded from a standard set by the average work of the class rather than by an arbitrary and fixed ruling.

The boy selects for his piece of work anything that he desires to make, providing, of course, that the article he chooses is within the class of operations with which he is familiar. The scope of his choice includes household furniture, floor lamps, candlesticks, reading-tables, desks, hall trees, stocking-driers, tailor's arms, etc. The principle at the basis of the instruction is that the boy will do best on a piece of work in which he is interested.

The fundamental operations are taught by the same method that is used in a physics or chemistry laboratory. The instructor demonstrates the principle in the classroom, setting the standard, and the boys carry it out in their individual tasks. Besides doing their regular work, the boys keep the machines and general equipment in repair.



Vanguard of fleet of 38 L Trucks passing through ville, Delaware County, in August, 1918, over T Road built in 1916. Note p condition of road after years of hard service.

Every community should have roads like these—

HERE is the story of how Delaware County, Indiana, got good roads, as told by the County Surveyor. Every one interested in good roads should read it.

"Our first Tarvia road was built in 1914. Between 1914 and 1918 we constructed sixteen streets and roads, with a total area of about 2,880,000 square feet.

"Some of these are main streets in the city of Muncie, others are main roads subject to heavy traffic, while others replaced low-lying gravel roads that used to wash-out at every overflow of the river.

"*Every Tarvia road and street in Delaware County has given uniform satisfaction. No repairs have been necessary.*

"Our so-called 'hard' roads, built of brick or concrete are often claimed as permanent construction, we have in this county brick roads and streets built than a decade ago that are almost impassable and soon be rebuilt. New material w"l be required bec the old brick cannot be used again.

"On the other hand, when a Tarvia road wea little stone is added, Tarvia is applied, and the ro as good as, or better than, new.

"With proper maintenance, our Tarvia roads last ten to twenty years. The cost of maintenance be small and the entire road can be rebuilt at less half the cost of a brick pavement.

"Considering the various types of road fro purely financial standpoint, one does not need to skilled in higher mathematics to arrive at the co answer."

(Signed) S. Horace Weber, County Surve

Tarvia is a coal-tar preparation for use in c structing new macadam roads or repairing ones. It reinforces the road surface and ma it not only mudless and dustless, also water-proof, frost-proof automobile-proof. A few Ta Roads in any community will ad property values and reduce taxes.

Illustrated Tarvia Booklet free on req

Tarvia

Preserves Roads—Prevents Dust

THE BARRETT COMPANY Limited: Montreal

New York, Cleveland, Birmingham, Seattle, Youngstown, Chicago, Cincinnati, Kansas City, Peoria, Toledo, Philadelphia, Pittsburgh, Minneapolis, Atlanta, Columbus, Toronto, Duluth, Richmond, Winnipeg, Milwaukee, Latrobe, Vancouver, Dallas, Bangor, Bethlehem, St. John, N. B., Boston, Detroit, Nashville, Washington, Elizabeth, Buffalo, Halifax, N. S., St. Louis, New Orleans, Salt Lake City, Johnstown, Lebanon, Sydney, N. S.

The Barrett Company

War Work of the Manual Training Department

Since the United States entered the war, e High School has made 300 bedside bles, 20 tableware chests and 15 Red oss house tables for convalescent homes r soldiers. These house tables are made three colors, green, blue, and pink, to rmonize with color schemes adopted in e convalescent hospitals. When the mistice was declared, considerable prog- ss had been made on a number of specially signed crutches for disabled soldiers, and of these were made last year. A station- y desk to be used by a patient who is not le to leave his bed is also one of the novel ticles made by the manual training de- rtment. Hundreds of other pieces of rniture were made for the Red Cross.

The General High School a Great Asset for Democracy

The new Schenley High School offers a number of different courses. The recent tendency has been to build academic high schools, commercial high schools, etc., but Mr. Rule, the Principal, strongly advocates a general grouping of all courses under one roof. He says that a student is often guided in his choice of vocation by the fact that a commercial or a Latin high school is near his residence. He believes that the average student is not prepared for any sort of specialization until his senior year, and prior to this time should be getting a general broadening course of instruction. A general high school, he believes, is the greatest asset for democracy in the community.

The Automobile Camping Ground

A New Element in Park Design

By Professor J. W. Gregg
Landscape Architect, University of California

AUTHORITIES on modern municipal development are united in the opinion that no town or city can be nsidered properly equipped without ade- ate parks. Such open spaces not only add the beauty of a community and to the easure of living in it, but are exceedingly portant factors in developing the health, orality, intelligence and business pros- rity of its citizens. Indeed, it is not too uch to say that a liberal provision of such atures is one of the surest manifestations the intelligence and progressiveness of community.

While it is perfectly justifiable during a riod of national stress to distinguish be- ween essential and non-essential activities, is a shortsighted policy which seeks to op entirely the development of public rks and recreation centers which have clearly demonstrated their function of nserving the health, the morals, and the ie spirit of cheerfulness and enthusiasm vital to the welfare of our citizenry. Vhat has been accomplished in the past by the development of parks and recreational facilities has been demonstrated on the battle fields of France. It is the great American "playground," with all its lessons of alertness, quickness of thought and action, physical trim and fair, hard play, that has so gloriously competed with the German "drill ground" for the supremacy of clean, free thought and right living. It is gratifying to note that many communities have thus far not lost sight of the economic value of parks and recreational areas and are continuing to make it easy for our people to find wholesome, happy and healthful outdoor enjoyment.

Planning Parks for the Entertainment of Motorists

From the small level areas providing only an irregular greensward and a miscellaneous tree growth, have been developed the so-called modern park-playgrounds with their numerous features and a more compact, intensive use, all compatible with the increasingly progressive and complex life



THE INVALID AGED DEPENDENTS THE SCHOOL CHILD THE FEEBLE MINDED THE ORPHAN

Due to the lack of fire safeguards, the chances
disastrous fire are greater in hospitals, schools, asylums,
than in most buildings.

In the last six years 219 hospital fires swept away $4 360
worth of property. Every school day a fine school buil
is destroyed.

To save the helpless from fire

WE send millions of little children into schools, confine thousands of aged and mentally unfit in asylums, and house hundreds of thousands of sick in hospitals with little thought as to their safety from fire. Men and women have been thoughtless while harrowing catastrophes in public buildings have gone on year after year.

"But our hospitals have fire escapes," one man will say, "and all the doors open outward."

"And I, myself, see that absolutely all the rubbish is kept cleared out of the basement in the high school," a woman will explain proudly.

"And in our schools we have fire drills," a third will say in tones of patient explanation.

Of course they will say these things, say them because they do not think. *They and you* should not assume that all that is humanly possible has been done to guard against a catastrophe until you have taken the trouble to find out what constitutes adequate up-to-date fire equipment.

Today we are finding out that everything has not been done, not even the first and simplest thing.

Men have protected some five billion dollars
their business property from fire by the use
automatic sprinklers.

State Industrial Commissions are guarding
lives of factory employees by requiring this sa
unfailing protection in business property.

The United States Government insisted on
industries being so protected.

Stirred as they now are with the value
sacredness of human life, men and women of
country are saying and will say insistently:

"Let our little ones, the helpless and the s
enjoy the benefits of this greatest fire safegua
Yes, all of them, the orphans, the insane, the
and infirm, the prisoners, over whom we have c
stituted ourselves guardians, must have it to p
tect their lives."

"Read Fire Tragedies and Their Remedy"

Any individual, trustee or official will find in "Fire T
edies and Their Remedy" the unvarnished truth and a p
of imperative social service. Write for it today. Add
General Fire Extinguisher Company, 283 West Exchange
Providence, R. I.

GRINNELL

AUTOMATIC SPRINKLER SYSTEM

When the fire starts the water starts



PERSPECTIVE DRAWING OF THE PROPOSED MOTOR PARK FOR MARYSVILLE, CAL.

f the people. Correspondingly, individual ocal requirements have rapidly broadened o include those of the automobile public, vhere heretofore the designing of the aver-ge-sized public park has involved the con-ideration only of those problems and fea-ures of direct interest and value to the esidents of the community in which it is ocated.

The automobile has without doubt ma-erially changed many of our business nethods, as well as those which have here-ofore governed our mode of living in gen-ral. As a pleasure vehicle the automobile s serving the very important and desirable unction of bringing thousands of people nto closer and more intimate contact with he open country. It is calling forth the vanderlust and primitive instinct for camp fe inherent in us as a nation of pioneers. So extensive has become this type of traffic hat good roads and hotels are not an abso-ute necessity for those who wish to pen-trate the heretofore strictly rural districts. Good roads, however, as they continue to pread in net-like fashion over the state, re important factors in directing and con-rolling the bulk of automobile traffic.

Because of the large amount of such raffic and the fact that an increasingly arge number of people are making a prac-ice of camping en route, the numerous beauty spots which were originally located along our highways and which furnished ideal conditions for temporary camps are fast being destroyed. The "auto pirate" and the "road hog" are one and the same animal, living on the "fat of the land," destroying and rendering insanitary all camping spots which they frequent. Roadside thievery, vandalism, and undesirable sanitry conditions are calling to the attention of towns and cities the desirability of establishing municipal auto parking areas where proper camping facilities can be furnished and maintained in satisfactory condition. Many municipalities in California are now providing such camping sites, and their popularity is evidenced by the heavy demands made upon them.

Municipal Auto Camps

The introduction of the auto camping feature not only adds a new element to park design but many new problems as well, and California towns and cities are meeting the main problem in three different ways: First, by securing a piece of wooded land near the highway outside of the city proper and permitting free camping privileges. Very often in this case there are no conveniences installed by the city, and little or no attention is paid to the maintenance of the area. Sometimes rough



Public Service Companies

have learned from experience that dependable service connections pay the best dividends—because their first cost is practically their last cost.

MUELLER

Service Boxes, Tapping Machines, Corporation Cocks and Goose Necks, render the maximum service for the minimum upkeep — as do all MUELLER Plumbing Fixtures.

Write for descriptive catalog and prices. Mail orders given immediate attention.

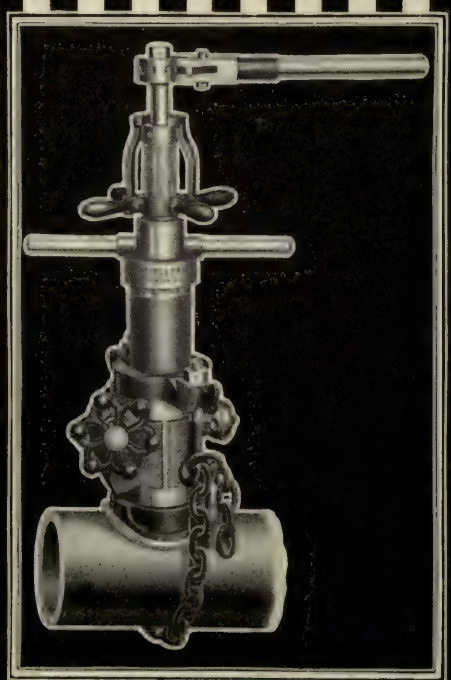
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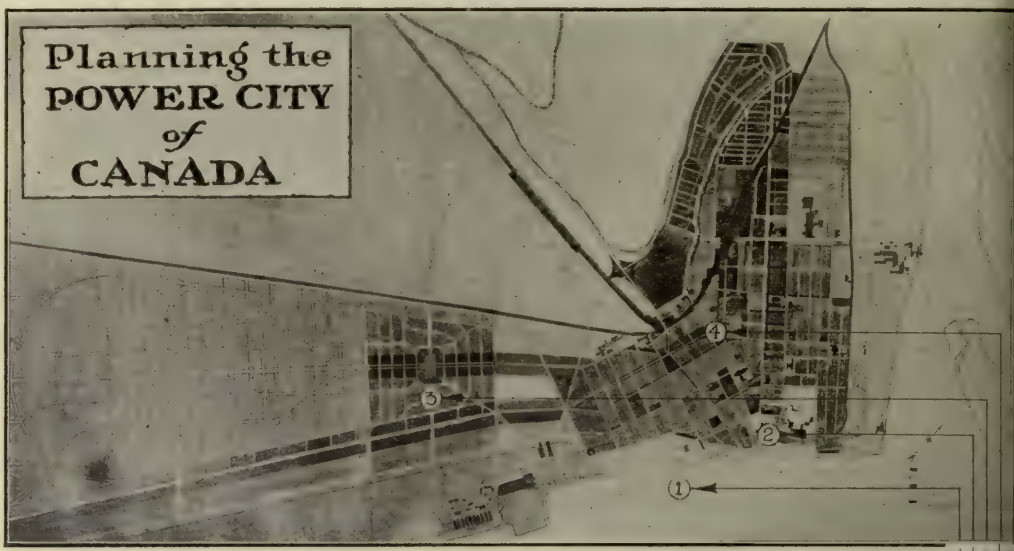
board tables and seats are built, water is piped to the site, and rough toilet facilities are provided. Such areas are of course better than nothing, but as a rule they soon become damaged and misused to such an extent that they are unattractive to the better class of tourists.

Second, some communities which already possess large or medium-sized parks, which may be wholly or partly developed, are setting aside a portion of such parks for camp use, and as a result are providing more and better camping facilities. Because such an area is wholly within the park, it also receives some care and does not therefore become a seriously objectionable feature. Usually, however, such a camping area is located with no regard for the design of the park as a whole, and is consequently a most conspicuous and obtrusive element. Such a feature, like all others in park design, should appear to fit into the general scheme and become an ornamental as well as a useful element. Many cities and towns possess parks with undeveloped spaces where, with due regard to the principles of landscape design and the proper functioning of elements, most serviceable and pleasing camp sites may be established. If, in attempting to locate such an area the design and uses of the park as a whole are not studied, the auto camping ground will prove a conspicuous and oftentimes disagreeable "afterthought." Such camping spaces should be made as attractive as the rest of the park by the use of a reasonable amount of ornamental plantings and the utilization of materials of construction which are similar to those used elsewhere thruout the park. Roads and walks should be definitely located, well built and maintained. Proper facilities for cooking should be permanently placed in order to prevent campers from building fires wherever their fancy dictates. A good water and sewage system should be installed and proper bathing and toilet facilities conveniently but not conspicuously situated. It is most desirable to extend the lighting system to that portion of the park, as well as to install all other features which will in any way aid in making the site convenient, healthful, pleasant and attractive.

Third, those communities which up to the present have never possessed a well-developed park or playground and which cannot afford to secure a very large piece of land are meeting this auto camping problem by first having detailed landscape plans prepared which can be followed as fast as time and funds permit. Such plans should provide in a systematic and attractive way for all the features necessary for the health and enjoyment of citizens of the community as well as for strangers within its gates. If such plans can be prepared in advance of any construction work, all park, playground, and auto camping features can be so arranged as to produce the maximum of service and beauty.

The city of Marysville is fortunate in having possessed the foresight to proceed along this line. When its plans are carried out, the city will possess a park where its citizens, young and old, can enjoy the cooling shade of beautiful trees, or can gather on the open lawn as in an outdoor auditorium and enjoy any kind of entertainment presented from the broad, stage-like porch of a beautiful, well-equipped and centrally located park house. Well-built walks will define two spacious playground areas for small children, and a proper mass planting of trees and shrubs will give individuality, privacy and charm to the auto camping section, which is conveniently accessible from two streets.

Here the tired but happy traveler will find his individual parking space by the side of an attractive little shelter house equipped with gas, light and water, as well as table and seats. This well-kept street of camp-homes centers on the park house, where will be provided showers and other comfort station facilities and a chance to rest by an open fireplace after the day's drive. In such a plan the requirements of compactness, utility and beauty have been fulfilled, and Marysville will profit greatly thereby.



A STUDY OF THE NEW CITY PLAN

For this city of 30,000 inhabitants a complete city plan and municipal expansion report are now being made to encourage and direct the industrial, civic and physical growth to three times its present size.

IN THE SAME CITY—

1. An intensive study of the possibilities and methods of developing a large harbor business is to be made.
2. Plans are being drawn for a $1,000,000 hotel.
3. At this point land has been laid out and plans completed for a residential addition of 1,000 dwellings for industrial workers.
4. Markings indicate changes recommended in existing streets.

The above work is being carried out by

MANN & MacNEILLE

Architects, Engineers and Municipal Developers

70 East 45th Street, New York, U.S.A.

Municipal Developers and Town Planners
Designers of Buildings of all Types
Harbor and Water Front Developers
Sanitation and Construction Engineers

To City Officials and Secretaries of Chambers of Commerce—

Upon request we shall be glad to send you a detailed outline showing the various factors which should be considered in a program of municipal expansion, including (1) economic features in the development of a city; (2) the housing problem; (3) the factors involved in harbor front and inland waterway development and (4) features of a proper city plan.

To those Interested in Any Phase of the Above Service—

We shall be glad to receive inquiries regarding any type of building or engineering design, industrial housing, building appraisals, city planning, community buildings and the planning of sub-division or allotment property.

An attractive architectural reprint "The Town of Perry Point, Md.," will be mailed upon application. This is an illustrated description of a newly built town fully designed by our organization.

THE SERVICE OF ECONOMIC EFFICIENCY

News and Ideas for Commercial and Civic Organizations

Progress of City Planning in Dallas

DALLAS, TEX.—In 1911 a report on the city planning needs of Dallas was prepared by George E. Kessler, of St. Louis. The plan provided for the opening and widening of certain streets in order to correct traffic conditions; for the grouping of railroad facilities so as to provide un'on passenger and freight terminals instead of several isolated stations; for the improvement of the channel of the Trinity River, which subjects large areas to intense floods and renders them valueless as building sites; and for a system of parks and playgrounds and connecting parkways.

During the eight years that have elapsed considerable work has been done in connection with the park and parkway system. The building of a union passenger terminal and the abandonment of the numerous isolated stations have been accomplished. The railroad tracks that run for a considerable distance on Pacific Avenue parallel to the three principal business streets have been ordered removed. This will eliminate a constant menace to traffic and to the business development of that section.

Dallas is a city of approximately 150,000 people, the majority of whom reside east of the Trinity River, which flows in a southerly direction between the communities of Dallas on the east and Oak Cliff on the west. The area that is subject to flood is over one mile in width and is entirely undeveloped. The business which originally started on the higher, seldom-flooded levels near the river has changed very much in character, and the larger concerns have receded farther and farther east, following three streets and assuming a "shoe-string" form. An increasing number of tall buildings in that section has produced a serious congested area which must be corrected. As the shifting of retail business has proceeded, the property nearer the river has steadily decreased in value. What should be the highest-valued property in the city, the natural center of the community, has become less and less valuable and is now at the edge instead of in the center of the city.

This condition has led to the formation of the Dallas Property Owners' Association, which is composed of a majority of the large property holders in the down-town section, who realize that immediate steps must be taken to alter the situation and stabilize values. It is not the aim of the organization to revive the district by the promotion of enterprises alone, but to correct errors due to the absence of foresight in laying out the city originally and to make the area a desirable location for new business enterprises.

The following quotation from the prospectus of the Property Owners' Association contains a statement of its definite objects:

"Among the aims of the organization will be to do those things which are necessary for the permanent relief of congestion about Akard Street by developing new ways for local and thru traffic; to encourage property owners in the down-town district to erect new and modern buildings and facilities for doing business, gradually getting rid of obsolete and unsightly structures; to aid in bringing new and needed business enterprises to Dallas; to put new life and ginger into certain business districts which need such rejuvenation; to aid in the development of a zoning system in Dallas along lines successfully demonstrated in other cities; to assist in every possible way in the determination to remove the overflow situation in Dallas by straightening out the Trinity River and developing that section along the most modern engineering lines which are practical and feasible; to assist the project of Pacific Avenue track removal and the proper development of that avenue. In short, to do all things which are sensible, practical and feasible —actually carrying out the plans commonly recognized as being proper and needed."

It is evident that every step which the Association takes to better the condition of its holdings will react to the benefit of

Permanent TRADE MINWAX MARK Protection

For Sub-Level Structures

The permanent water protection afforded by Minwax Hard Waterproofing combined with Minwax Saturated Cloth under the Minwax System, has been proved beyond question by installations of years' standing. Minwax itself is chemically neutral, physically stable, and to all intents time-proof. Minwax Cloth has ample elasticity and flexibility combined with tensile strength adequate to every emergency. The two together make a waterproof sheathing that is tough, strong, elastic, flexible, practically puncture-proof, and (so far as observations can prove) free from all deterioration. Write for Bulletin 11.

For Expansion Joints

Where a watertight joint must be maintained under expansion and contraction, Minwax Expansion Joint Cement is pre-eminent. It bonds perfectly and permanently to the walls of the joint—something no pre-moulded joint can do. It is flexible and elastic, yielding under expansion and contraction movements of the walls of the joint, without fracture. It retains its plasticity at all ordinary temperatures. Chemically neutral and physically stable, it gives permanent protection. Nothing is needed to make a permanent joint but the cement itself. There is no felt or fabric to rot and fail. Ask for Bulletin 11.

For Metals Exposed to Heat

Minwax Coating No. 500 is a true asphaltic hydrocarbon coating with a very high melting point. It dries in a few hours into a tough, elastic, smooth, black enamel-like surface that withstands temperatures up to 800 degrees Fahr. without running or physical alteration. It is proof against heat, fumes and acids, bonds closely to the metal, does not chip, flow or crack, and forms an impervious sheath over the metal that gives exceptional service and protection against corrosion. Preeminently adapted to stacks, boiler fronts, tanks, hot piping, etc. Described in Bulletin 14.

For Floors of All Kinds

For cement, composition, terrazzo, tile, marble, or wood floors there is a Minwax Floor Treatment that gives added permanence, greater resistance to wear and abrasion, an improved surface, and as non-dusting as floors can be made. Minwax Floor Treatments are not surface applications but sub-surface impregnations to a considerable depth. Their action is mechanical, not chemical. Being physically and chemically stable, they are permanent in their effects. The best of floors is made more durable by Minwax Treatments. Send for Bulletin 13.

MINWAX COMPANY, INC., 18 East 41st St., New York

Chicago Pittsburgh Cleveland Detroit Baltimore Cincinnati
Portland Seattle San Francisco Los Angeles

every other section of the city. The Association will not depreciate the values in other sections in order to raise those of its own. The banding together of property holders for the purpose of increasing the value of their holdings by the rational physical reconstruction of their section is a decidedly forward step in city planning practice.

Charles L. Sanger has been elected president of the Association. The directors represent a variety of business and property interests. George E. Kessler has been retained as consulting engineer, and the writer as his resident assistant.

LAWRENCE V. SHERIDAN,
Resident Engineer, Dallas Property Owners' Association.

✣ ✣

A Campaign to Tear Down Useless and Dilapidated Buildings

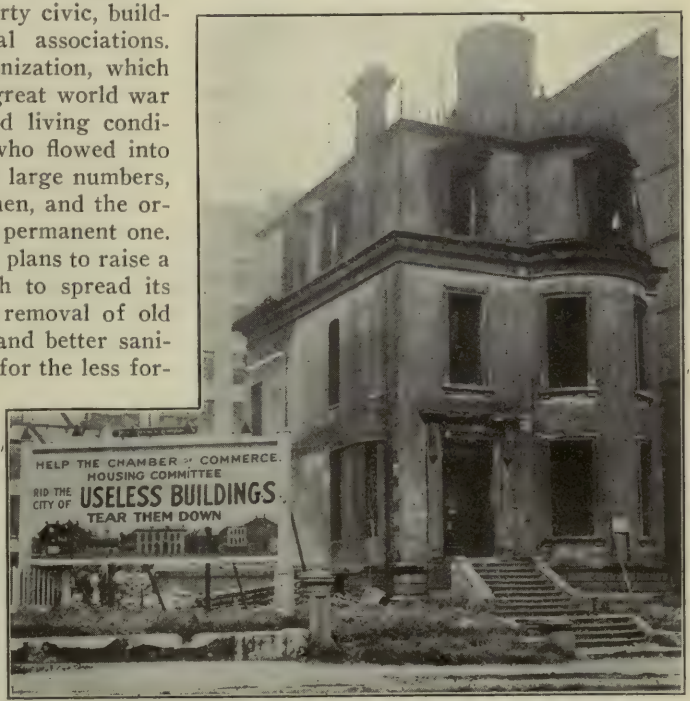
ST. LOUIS, MO.—The result of the first year's labor of the St. Louis Chamber of Commerce in its crusade for better housing conditions in St. Louis is the development, from a comparatively small committee, of a Housing Conference, an organization having a city-wide scope and embracing in its personnel over thirty civic, building, welfare and industrial associations. The need for such an organization, which was established during the great world war to safeguard the health and living conditions of the war workers who flowed into the city at that time in such large numbers, is nearly as great now as then, and the organization has been made a permanent one.

During the coming year it plans to raise a fund of $10,000 with which to spread its propaganda advocating the removal of old and dilapidated structures, and better sanitation and living conditions for the less fortunate citizens in the city's congested districts. The workings of this Housing Conference will be under the direct supervision of its various committees and a salaried secretary.

Many of these old structures are located on the most traversed thorofares of the city. As a part of its crusade, the Chamber of Commerce has placed painted billboards, like the one in the accompanying illustration, adjoining these old structures, with the object of arousing the public to the point of protesting against the existence in the city of old and unsightly buildings that have long ago outlived their usefulness and now remain tenantless or unfit for habitation—eyesores to civic pride.

This means of publicity has caused many public-spirited citizens to respond to the idea, and many of those old buildings and shacks have now been torn down. Other St. Louis property owners are voluntarily cleaning up their premises. The condition which, until a short time ago, went by unnoticed, is now being remedied thru an aroused public spirit.

The razing of these unsightly structures by the property owners also has a high commercial value. For instance, the tearing down of the residence shown in the accompanying illustration, which was done recently, represents a saving to the owner of about $200 a year in taxes and insurance, and at the same time has placed the property in better shape for a quick sale. The



THE TYPE OF STRUCTURES BEING RAZED THRU THE EFFORTS OF THE ST. LOUIS HOUSING CONFERENCE

dump wagons

Highway Engineers,
Everywhere, U.S.A.

Watson Dump Wagons for hauling road building materials and ashes are giving wonderful service in many cities and counties. Have you investigated

"WATSONS"

and seen the dependable non-sagging bottoms which over-lap and stay tight? If not, get in touch with us at once. We will gladly furnish data on our full line of dump wagons, semi-trailers, and tractors.

Superior service, the best workmanship and material go into the Watson Line to make it the best on the market.

Yours for service,

WATSON WAGON CO.

30 Center Street,
Canastota, N. Y.



appearance of the grounds, too, is greatly improved, because bare ground is always preferable to such structures, whose existence tends to increase the fire and moral hazards.

Another important phase of the work planned by the Housing Conference is an extensive campaign to interest the owners and managers of large industrial corporations in subscribing to housing and building companies' stock for the purpose of building and selling houses to the industrial class. This will cause a decrease in the demand for housing in the congested districts where the rental value is low because of the inconveniences and unsanitary conditions of the property. That will result in the vacating of this class of property and in a decrease in its commercial value until the only way in which the owner can dispose of it will be thru razing the houses and selling the land to be used as sites for modern industrial enterprises.

R. M. JOHNSTON,
Publicity Department, St. Louis Chamber of Commerce.

Selling Ideas

CEDAR FALLS, IOWA.—The Commercial Club of Cedar Falls is selling community ideas to the people just as merchants sell shirts and potatoes, and the Club uses the same methods—newspaper space and a show window.

The newspaper space is taken up with the usual news stories, furnished to the daily papers day by day, and a special department of two columns or more in the Saturday night edition, prepared by the secretary of the Commercial Club. This department is made up of an editorial, news notes, and a "gossip" column which contains intimate, complimentary and personal items about the members and is eagerly read. The department really answers the purpose of a house organ, but it has the added advantage of being read by all the people instead of merely by the Club members.

The picture shows the Club's show windows on Main Street when they were being used to further the campaign for the collection of seeds and nut shells for gas masks and for collecting local historical relics for a display at the district fair. Both campaigns were aided greatly by these displays, which attracted wide attention.

The Cedar Falls Commercial Club believes that ideas should be visualized and kept before the people if they are to be successful, and that the time-tried methods of merchandising are as applicable and successful with ideas as with dry goods.

HERBERT F. McDOUGAL,
Secretary, Cedar Falls Commercial Club.

Fort Worth's New $2,000,000 Hotel

FORT WORTH, TEX.—A $2,000,000 hotel is to be erected in Fort Worth shortly thru the efforts of the Fort Worth Chamber of



THE WINDOWS IN WHICH THE CEDAR FALLS, IOWA, COMMERCIAL CLUB DISPLAYS COMMUNITY IDEAS



Sanitary Garbage Collection Is a Municipal Asset

A close-covered and watertight garbage wagon prevents the spread of filth and disease. A good wagon will not leak or spill the garbage, and a tight cover keeps the flies away.

Studebaker Garbage Wagons and Carts meet these requirements.

Write for full particulars and descriptive literature regarding the complete line of Studebaker Municipal Vehicles.

Studebaker

South Bend, Indiana

Largest Manufacturers of Vehicles in the World—Established 1852

3118

Commerce. A hostelry of large proportions is needed to take care of the new population that has been flowing into the city in such large numbers since the recent oil discovery in adjacent counties. At a banquet held on the night of February 24 that had been arranged by the Chamber of Commerce, $1,200,000 in subscriptions was pledged by the city's leading business men. The amounts ranged from $100 to $66,000, and assurances of other subscriptions that will total several hundred thousand dollars have been received. The building site will be paid for in stock, and four realty owners have offered desirable locations, for which they have agreed to accept stock in payment. The site will probably cost $300,000.

The hotel is to contain about 500 rooms, which will be modern in every respect, each with a private bath. Several operating companies are bidding for the hotel and have agreed to guarantee the subscribers six per cent interest net on their investment.

ROSCOE ADY,
Publicity Commissioner, Fort Worth Chamber of Commerce.

The Community Meetings of the Gloversville Chamber

GLOVERSVILLE, N. Y.—The recent experiment of the Gloversville Chamber of Commerce in alternating membership luncheons and evening community meetings, holding one or the other each week, has proved popular here, as shown by the large audiences that greet the speakers at the night sessions held in the auditorium of the Gloversville high school.

These community meetings have developed constructive work as important as that resulting from the luncheons. From one came the $30,000 glove advertising campaign. From another came a standard cost system for all glove manufacturers, both large and small. On May 9 Dr. Frank D. Garland gave the community the first step in a study of the city manager form of government. One week later State Conservation Commissioner Dr. George D. Pratt gave the city the story of the work of his department.

The Members' Council of the Gloversville Chamber of Commerce finds that the bi-weekly citizens' meeting is interesting the entire community in the work of the organization.

J. KENNARD JOHNSON,
Manager, Gloversville Chamber of Commerce.

New Bulletins

BRANTFORD, ONT.—*Brantford Communicator*, published monthly by the Brantford Chamber of Commerce.

CANTON, ILL.—*Canton Progress*, the official monthly bulletin of the Canton Chamber of Commerce.

HAGERSTOWN, MD.—*The Hagerstown*, the official monthly bulletin of the Hagerstown Chamber of Commerce.

HATTIESBURG, MISS.—*The Hattiesburg Spirit*, published monthly by the Hattiesburg Chamber of Commerce.

NEW ORLEANS, LA.—*Association of Commerce News Bulletin*, published monthly by the New Orleans Association of Commerce.

PORT HURON, MICH.—*Port Huron*, the official monthly bulletin of the Port Huron Chamber of Commerce.

Recently Issued Printed Matter

AUBURN, N. Y.—The War Memorial Committee of the Auburn Chamber of Commerce has issued a printed questionnaire to its members on the subject of a suitable memorial to the soldiers and sailors of the city and county.

KENTON, OHIO.—The Kenton Chamber of Commerce has published its second annual report covering the year 1918.

LEBANON, PA.—"Lebanon, Keystone City of the Keystone State," is the title of a quarto-pamphlet, beautifully illustrated, telling about "Lebanon's Yesterday, To-day and To-morrow," recently issued by the Lebanon Chamber of Commerce.

NEW ORLEANS, LA.—The New Orleans Association of Commerce has issued a four-page leaflet entitled "Why?" giving "Some of the Actual Results" of its work during recent years.

NIAGARA FALLS, N. Y.—"Niagara Falls, a Better City in which to do Business," is the title of the annual report of the Niagara Falls Chamber of Commerce.

The Niagara Falls Chamber has also issued a "Statement of Financial Conditions as of Income and Expenses for eleven months ending February 18, 1919."

NIAGARA FALLS, N. Y.—A leaflet dealing with the threatened deterioration of the public school system because of the underpaying of school teachers has been issued by the Rotary Club of Niagara Falls. It contains the resolution adopted by the Club "To Maintain and Improve the Standard of the Public School System."

PORT HURON, MICH.—The April issue of *Port Huron*, the official bulletin of the Port Huron Chamber of Commerce, contains a summary of the Chamber's activities for the past year.

ROME, N. Y.—The Rome Chamber of Commerce has issued a folder addressed to its friends, containing a "membership campaign message" about how the organization doubled its membership in January thru a campaign which it conducted without outside aid.

SYRACUSE, N. Y.—The Syracuse Chamber of Commerce has issued a folder entitled "The Year's Work," giving "A Few of the Results Accomplished During a Year of Chamber of Commerce Work."

WINNIPEG, MAN.—"Winnipeg Water Works, A World's Wonder," is the title of a folder issued by the Winnipeg Board of Trade.



AMERICA again has called upon the power and resource of her motor trucks—this time to catch-up her war-interrupted building program.

Just as the nation's calls for war-supply and food-supply were answered, so this newest call is being answered by the combined strength of thousands of trucks. Nothing but the motor truck matches the speed of steam-shovel excavation. No other carrier is adequate to modern building methods.

Thousands of Federals are making good for builders—giving always that complete satisfaction which has brought from the public an ever increasing demand for more.

"Shorten the miles to market —build better roads"

Federal "Traffic News," a magazine of modern motor haulage, will be sent free on request, to responsible executives.

Federal Motor Truck Company
Detroit, Michigan

FEDERAL

One to Five Ton Capacities

Changes Among the Secretaries

A list of the recent changes and new appointments occurring among the secretaries of commercial and civic organizations thruout the United States.

Readers are asked to notify the Editors of such changes as soon as they occur, in order that the list may be made as complete as possible each month.

J. B. ABELL is the new secretary of the Elgin Ill., Commercial Club, succeeding George H. Anderson.

NEAL BASSELL has been elected secretary of the Young Men's Chamber of Commerce at Belton, Tex., succeeding A. G. Vick.

M. C. BUNYAN, formerly secretary of the Carlisle, Pa., Chamber of Commerce, and later with the American Expeditionary Forces, has been elected secretary of the Jamaica, N. Y., Board of Trade.

L. A. CLARK has tendered his resignation as secretary of the Greenville, Miss., Chamber of Commerce, to enter other business in Greenville.

GEORGE H. COX has resigned as secretary of the Kenton, Ohio, Chamber of Commerce, to take effect July 1.

CLIFFORD B. DENISON, formerly recreation secretary at the Drexel Hut Naval Training Station, Newport, R. I., is the new secretary of the Pawtucket, R. I., Chamber of Commerce.

J. F. DENNON is the new secretary of the Bagley, Minn., Commercial Club.

WEBER H. FOUTS has been chosen executive secretary of the Junior Chamber of Commerce at Dallas, Tex.

SAMUEL H. FOWLKES has been elected secretary of the newly-organized Chamber of Commerce at Marshall, Tex.

LUCIAN D. FULLER has resigned the secretaryship of the Board of Trade at Cambridge, Mass., to accept the secretarysnip of the Bath, Me., Chamber of Commerce.

G. ROBERT GALLOWAY has resigned the assistant executive directorship of the War Civics Committee, War Department, East St. Louis, Ill., to accept the general secretaryship of the Chamber of Commerce of Kewanee, Ill.

JAMES Z. GEORGE has been elected General Manager of the Texas Chamber of Commerce. He was formerly General Manager of the Houston, Tex., Chamber, which position he has resigned.

W. L. GRAVES has been elected secretary of the Bridgeport, Tex., Commercial Club.

RAWLEY W. HOLCOMBE has resigned the secretaryship of the Chamber of Commerce at Butler, Pa., to accept the secretaryship of the Hutchinson, Kan., Chamber of Commerce.

GEORGE M. HUNTER has been chosen as the new secretary of the Adrian, Mich., Chamber of Commerce. Mr. Hunter was formerly telegraph editor on *The Detroit Journal.*

L. S. JOHNSON has resigned the secretaryship of the Northampton, Mass., Board of Trade.

B. W. JONES, of Blackwell, Okla., is the new secretary of the Chamber of Commerce at Enid, Okla. D. T. Meek, who the May issue stated had been elected to fill this position, has been appointed County Agricultural Agent for Garfield County, Okla.

L. B. JUDSON has resigned the secretaryship of the Gary, Ind., Commercial Club, to engage in work along another line in New York State.

J. A. B. KEITH has been elected secretary of the Vandalia, Mo., Chamber of Commerce.

F. D. KRIESS is the new secretary of the Commercial Club at Beresford, S. Dak.

ROY F. LEACH has been elected manager of the reorganized Chamber of Commerce at Lewiston, Me. Mr. Leach was formerly assistant clerk of the Public Utilities Commission of the state of Maine.

HARRY H. LYONS has been elected secretary of the Ordway, Colo., Publicity Club.

E. T. MCBIRNEY has resigned as secretary of the Civic and Industrial Association of Newport, Ky., to accept the state supervisorship of the War Savings Society, with headquarters at Newport.

GEORGE C. MANTOR has resigned as secretary of the St. Cloud, Minn., Commercial Club, to accept the secretaryship of the Aberdeen, S. Dak., Commercial Club.

W. A. MILNE is the new secretary of the Muncie, Ind., Commercial Club, succeeding Frank J. Claypool, who has resigned to engage in other business.

J. R. MURRAY has been selected as the new secretary of the Ennis, Tex., Chamber of Commerce. Mr. Murray was formerly vice-president of the First Guaranty State Bank and Trust Company of Ennis.

CAPTAIN OVE E. OVERSON, of San Antonio, Tex., has been elected secretary of the Stamford, Tex., Chamber of Commerce, succeeding Homer D. Wade.

JOHN L. PEPPER has been elected secretary of the Triple Cities Chamber of Commerce of Daytona, Daytona Beach and Seabreeze, Fla., with headquarters at Daytona. Mr. Pepper for the past year has been acting as supervisor of civilian relief of the Southern Di-



A GMC FOR EVERY CITY NEED

From the light, serviceable three-quarter-ton GMC to the big, powerful, heavy duty five-ton model, there is a GMC truck that meets every city and municipal need—

The three-quarter-ton model for hauling tools and supplies, also for carrying small job gangs to and from new work.

The heavy duty five-ton model for the highway department, used in building and keeping new roads in repair.

And the intermediate models for work that come in between these two sizes—such as fire department equipment, police and ambulance work.

Municipalities find it a distinct advantage to standardize on GMC trucks, for they then receive the full advantages of GMC economy of operation.

GMC trucks are now in use in all branches of city work, in every size city the country over and daily saving many times their cost.

There is a GMC to fit every city's hauling problem. Write Truck Headquarters today and let us tell you more about GMC trucks in city work.

Let Your Next Truck be a GMC.

GENERAL MOTORS TRUCK CO

Pontiac, Michigan

Branches and Distributors in Principal Cities. (510)

vision of the American Red Cross, with headquarters in Atlanta, Ga.

O. M. PHELPS has been reappointed secretary of the Huron, S. Dak., Commercial Club. Mr. Phelps resigned this position last fall to enlist in the United States Navy.

PAUL RANKIN has resigned the secretaryship of the Commercial Club at Dubuque, Ia. He is succeeded by Richard M. Plaister.

J. A. RAYBURN is the new secretary of the Scottsbluff, Nebr., Commercial Club.

C. A. REED has been elected secretary of the Commercial Club at Marble Falls, Tex.

LAWRENCE E. REEVES has resigned the secretaryship of the Elwood, Ind., Chamber of Commerce, to accept the secretaryship of the Anderson, Ind., Chamber of Commerce.

MRS. H. M. ROBINSON, formerly secretary of the Miles City, Mont., Chamber of Commerce, has been elected secretary of the Chamber of Commerce at Centralia, Wash.

WALTER W. SCHULTZ has resigned the secretaryship of the Chamber of Commerce at Hazleton, Pa.

R. A. SCRANTON has been selected as the new secretary of the Haskell, Tex., Chamber of Commerce.

FRED J. SHULTS is the new secretary of the Cohocton, N. Y., Commercial Club.

GEORGE C. SMITH has resigned as secretary of the Cumberland, Md., Chamber of Commerce, to accept the position of director of the Industrial Board of the Baltimore Board of Trade.

HERBERT STANLEY has been elected secretary of the Chamber of Commerce at Greenville, Miss., succeeding L. A. Clark.

ALBERT J. STOWE, formerly assistant secretary of the Davenport, Ia., Commercial Club and of the Greater Davenport Committee, and late with the United States Army, has been elected secretary of the Chamber of Commerce at Pella, Ia.

J. M. TANNER is the new secretary of the Cameron, Mo., Commercial Club.

E. C. TAYLOR has resigned the secretaryship of the South River, N. J., Chamber of Commerce, to become associated with the American City Bureau.

E. W. THORPE has been selected as the new secretary of the Chamber of Commerce at Pullman, Wash.

M. A. TURNER has resigned the secretaryship of the Ranger, Tex., Chamber of Commerce, to become city manager of Ranger. He is succeeded by George T. Hemmingson, late with the United States Army.

HOWARD WILCOX has been elected secretary of the Chamber of Commerce at Highland, N. Y.

SAMUEL WILSON has resigned his position as manager of the Kansas City, Kans., Chamber of Commerce, to become associated with his brother, Lucius E. Wilson, in charge of a district office soon to be opened by the American City Bureau in Chicago. Raymond B. Gibbs, Secretary of the Board of Commerce of Lockport, N. Y., has been chosen to succeed Mr. Wilson in Kansas City.

Watch Your City

The Public Health Service plan of rating the 710 cities of the United States according to the measures adopted to control venereal disease is progressing rapidly. This plan has the backing of all governmental agencies interested in the problem of venereal disease control, namely, the War Department (Law Enforcement Division of the Commission on Training Camp Activities), the Interdepartmental Social Hygiene Board, and the state boards of health. In other words, the entire United States Government is behind this plan.

Interest in the campaign is to be stimulated by a local civic organization, chosen according to the consensus of opinion on replies to questionnaires. This civic organization, by accepting the leadership of the campaign, has an opportunity to be allied with several of the most powerful agencies in the country. The first organization to accept this responsibility was the Board of Health Control of Columbus, Ga.

Every city of 10,000 or more population should put itself on the map by getting behind this much-needed health movement. Every organization which leads or assists in this campaign is doing its bit to make it possible for the returning soldiers to lead clean lives in their home town. And the more enthusiasm is stirred up in favor of the various medical, educational, and law enforcement measures advocated by the Public Health Service to control venereal diseases, the higher will be the rating of that city when the grades are published for cities which are in the same population group.



Dependability

On municipal or any other public work, dependability should be the prime consideration in choosing motor-truck equipment. For delays mean not only loss of use of the truck, but delay to the work and loss of time of all the men on the job.

This necessitates quality trucks,—for the maximum dependability can come only from the best in design, in materials and in workmanship.

Denby trucks have become known the country over for the unusual extent to which they possess this prime quality. And backing it, is the ability to do easily the work that is difficult or impossible to one of lesser standards.

We will gladly send data on trucks and equipment for any branch of work.

The Denby Line is Complete
Ranging From 1 to 6 Tons

Denby Motor Truck Company, Detroit

The City's Legal Responsibilities and Powers

A Monthly Department of Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

For special assistance in ascertaining the law, statutory or judicial, on any legal question relating to municipalities, address Legal Department, THE AMERICAN CITY, *Tribune Building, New York City.*

Changing Street Railway Fares

The Ohio Public Utilities Commission is without power to change fares to be charged by a street railway company, as established by a valid municipal franchise. As long as a public utility retains its franchise and operates under it, its terms must control. (Ohio Supreme Court, Interurban Railway & Terminal Co. vs. Public Utilities Commission, 120 Northeastern Reporter, 831.) But it is decided by the Delaware Superior Court in the case of Robertson vs. Wilmington & Philadelphia Traction Co., 104 Atlantic Reporter, 839, that under the laws of Delaware the Board of Public Utility Commissioners, as an agency of the public, may consent to an increase in street railway fares over those fixed as a maximum in the street railway company's charter. And in the case of City of St. Louis vs. Public Service Commission of Missouri, 207 Southwestern Reporter, 799, it is held that street railway fares, altho fixed by municipal ordinance, are subject to change by the state acting thru the Legislature, or its agent, the Public Service Commission.

✣ ✣

Municipal Contractor's Bonds

A bond given the city of New York by a municipal contractor, merely conditioned to do the work properly and to make prompt payment of all sums due to all persons supplying labor or materials in the performance of the contract, did not give a material man standing to maintain suit on the bond. "The bond does not purport on its face to be given for the benefit of laborers or material men, but is given to the city of New York, and is exacted as security against liens arising out of the prosecution of the work. In order for this bond to be enforceable against the surety, it would be necessary for the city to be under some duty or obligation to the material man." (New York Supreme Court, Appellate Division, Eastern Steel Co. vs. Globe Indemnity Co., 174 New York Supplement, 98.)

✣ ✣

Assessment Proceedings Presumptively Regular

A property owner who attacks the validity of an assessment against his real estate on account of a local improvement has the burden of showing that the municipal authorities failed to follow statutory requirements in the proceedings, or that the assessment complained of exceeds actual benefits to his property. (Iowa Supreme Court, Dickinson vs. Town of Guthrie Center, 170 Northwestern Reporter, 759.)

✣ ✣

Municipal Water Plant Construction

A clause in a contract for the purchase of a municipal water-works plant, requiring the plant to produce water of pure and wholesome character, was complied with by meeting such tests as were generally known at the time of delivery by the seller. (New Jersey Court of Chancery, Jersey City vs. Jersey City Water Supply Co., 105 Atlantic Reporter, 494.)

✣ ✣

Recovery Under Paving Contracts

Under a street paving contract requiring the contractor to replace any defective portions, he may recover compensation at the agreed rate per square yard on all work properly done, altho not approved by the city, where the municipal authorities have failed to point out any portions of the pavement requiring replacement. (Kansas Supreme Court, Frederick vs. City of Bonner Springs, 178 Pacific Reporter, 435.)



Flushers mounted on Indiana Chassis—used by the City of Dallas, Texas, and the City of St. Joseph, Mo.

Flushing Costs Reduced

Many municipalities, like Dallas and St. Joseph, have found that flushing costs by the year, month, week and day are decidedly lower with the Indiana than any other make of chassis.

The reason lies in Indiana greater reserve strength and consequently its longer service. Numbers of Indiana Trucks are in service today, after six, seven and eight years of hard continuous service. Your Indiana flusher service would be figured in years plus years.

112% Reserve Strength

is built into every part of the Indiana Chassis. Its heavy duty motor, oversized bearings, 100,000 mile rear axle, gasoline saving carburetor and its dependable magneto assure longest service at the lowest cost of operation.

And with all this Indiana Truck offers $150 to $850 more in value than do other trucks of equal capacity. The Indiana Truck is positively America's Greatest Truck Value.

WORM DRIVE

INDIANA TRUCKS

have through sheer merit, been the choice of those municipalities that have adopted motor flushers, because of efficiency in accomplishing the results and low cost of operation over a long period of years.

Write for our book, "Haulage Costs", which gives informative figures on service, loads and capacities.

INDIANA TRUCK CORPORATION

Dept. 120 **Marion, Indiana**

Traffic Regulation Applied

An ordinance of the city of Seattle giving a right of way in the use of streets to apparatus of the fire department, etc., responding to emergency calls, gives right of way to apparatus returning from a fire. (United States Circuit Court of Appeals, Ninth Circuit; Puget Sound Electric Railway vs. Benson, 253 Federal Reporter, 710.)

✣ ✣

Invalid Condition in Building Proposals

An ordinance of the city of Philadelphia requiring proposals for the construction of public buildings to specify that all stone cutting shall be done within the city violates the statutes of the state in so far as it tends to result in the award of a contract to one other than the lowest responsible bidder for work. (Pennsylvania Supreme Court, Taylor vs. City of Philadelphia, 104 Atlantic Reporter, 766.)

✣ ✣

Jitney Regulation Ordinance Void

Provisions of an ordinance of the city of Muskogee, purporting to impose an occupation tax on the owners and users of motor vehicles operated over the city's streets for hire, are void as contravening the General Highway Act of the state. (Oklahoma Supreme Court, City of Muskogee vs. Wilkins, 175 Pacific Reporter, 497.)

✣ ✣

Right to Reassess for Street Improvement

Proceedings to construct a new street improvement in the city of Oakland at the expense of abutting property owners were invalid where the street had been previously paved under a statute providing that the street should thereafter be kept in repair and improved by the municipality out of a fund to be appropriated by the Council for that purpose. (California District Court of Appeal, First District; Barber Asphalt Paving Co. vs. Abrahamson, 175 Pacific Reporter, 490.)

✣ ✣

Initiative and Referendum Provisions

The initiative and referendum provisions applicable to the city of Butte apply only to matters of general legislation, in which all qualified electors of the city are interested, and not to local matters such as the creation of a special improvement district, in which only inhabitants or owners of property in that district are interested. (Montana Supreme Court, Allen vs. City of Butte, 175 Pacific Reporter, 595.)

✣ ✣

Recovering Illegal Taxes Paid

Altho, ordinarily, a payment voluntarily made is not recoverable notwithstanding the fact that the payee was not legally entitled to it, still one who pays an illegal occupation tax under threat of prosecution as for violating the ordinance under which it is levied is entitled to sue to recover it. (Texas Court of Civil Appeals, Berman vs. City of Seguin, 205 Southwestern Reporter, 990.)

✣ ✣

Validity of Sewer Assessment

That a city constructed a sewer beyond a point fixed by the council's resolution of necessity, thus causing more of an assessed property owner's land to abut upon the sewer than would have otherwise happened, gives him no release against consequential assessments, unless his liability was thereby increased; and the burden is on him to show such increased liability. (Iowa Supreme Court, Williams vs. City of Cherokee, 169 Northwestern Reporter, 110.)

✣ ✣

Validity of Vaccination Ordinance

An ordinance denying permission to children to attend school unless vaccinated against smallpox is valid, and a proper exercise of charter power to "make all regulations which may be necessary or expedient for the promotion of health or the suppression of disease," altho there was but one case of smallpox in town when the ordinance was adopted. (Texas Supreme Court, City of Braunfels vs. Waldschmidt, 207 Southwestern Reporter, 303.)

✣ ✣

An Invalid Ordinance Against Advertising

An ordinance of the city of Covington, Ga., providing that "no merchant or dealer in merchandise of any kind shall offer any prize, or chance as a prize or gift to induce the sale of his goods" is void as being unauthorized by the municipal charter. It cannot be sustained under the "general welfare" clause. (Georgia Supreme Court, Commercial Security Co. vs. Lee, 97 Southeastern Reporter, 516.)

BURCH STONE SPREADERS



FOR ECONOMICAL GOOD ROADS BUILDING

The Burch Spreader attached to a motor truck has proved the best method for distributing crushed stone or gravel. It has entirely eliminated hand spreading wherever it has been used, and the results have been far more satisfactory. Any thickness of layer from 2 to 6 inches can be quickly spread on the road and controlled by raising or lowering the regulating gate. The Burch Spreader is substantially built, will stand rough wear and serves faithfully at all times.

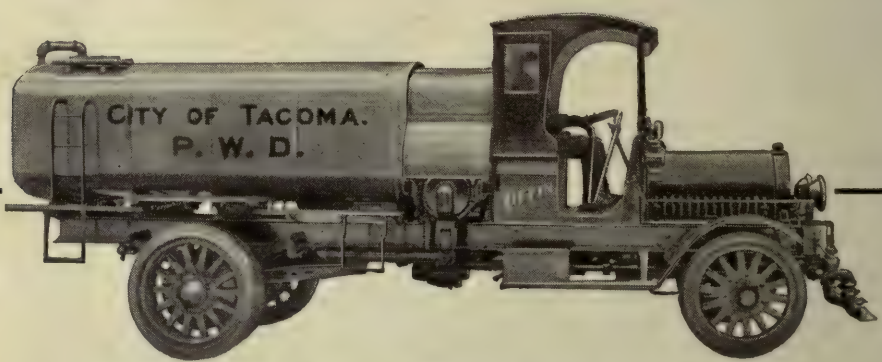
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Send for descriptive matter NOW.

BURCH PLOW WORKS COMPANY

Department C. **CRESTLINE, OHIO**

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The evidence, the logic and the proof are all against the city engineer who fails to investigate

TIFFIN STREET FLUSHERS

2-Motor-System

If he is considering Street Flushers and doesn't take TIFFIN into account he is ignoring the record of service of these vehicles in representative American cities—greatly exceeding the records of other machines.

If he is not considering Flushers for his city he is unprogressive because this is the most modern and effective method of keeping all kinds of paved streets clean and sanitary.

Ask us for literature

The Tiffin Wagon Company, Tiffin, Ohio

Makers, also, of Motor Trucks and Dumping Wagons

Limiting Cemetery Locations

Altho a law destroying the right of the burial of the dead by arbitrary and unreasonable restriction on it would be invalid, an ordinance adopted pursuant to charter authority, prohibiting establishment of a cemetery within one mile of the corporate limits of a municipality, is valid. (Illinois Supreme Court, Catholic Bishop of Chicago vs. Village of Palos Park, 121 Northeastern Reporter, 561.)

✣ ✣

Bridges Over Streets

A city council has no right to permit the construction of a bridge over a street for purely private benefit when it serves to obstruct the free use of the street by the public. (Illinois Supreme Court, People vs. Corn Products Refining Co., 121 Northeastern Reporter, 574.)

✣ ✣

Informally Established Streets

The existence of a way as a public street may be inferred from the fact that it has long been traveled as such, and that the city has made repairs on it and used it as an ordinary street, as by laying sewer and water pipes in it, maintaining electric lights in it, etc., altho the way may never have been formally laid out. (Massachusetts Supreme Judicial Court, Sullivan vs. City of Worcester, 121 Northeastern Reporter, 788.)

✣ ✣

Validity of Local Improvement Proceedings

The adoption by a city council and publication of a preliminary resolution of intention to pave a street are jurisdictional acts. Unless this is done, no valid assessment can be made against abutting property on account of the improvement. (Oklahoma Supreme Court, Southern Surety Co. vs. Jay, 178 Pacific Reporter, 95.)

✣ ✣

Recovery of Saloon License Fees

Money voluntarily paid to municipal authorities for a license to sell intoxicating liquors cannot be recovered on the prevention of sale of liquors by a vote at a subsequent local option election. (Minnesota Supreme Court, Minneapolis Brewing Co. vs. Village of Bagley, 170 Northwestern Reporter, 704.)

Regulating Junk Dealers

The fact that thieves often dispose of their plunder to junk dealers warrants a city to adopt measures for the licensing of persons engaging in the business of junk dealing. Refusal to grant a license to a particular dealer will not be interfered with by the courts unless the municipal authorities have plainly abused their discretion. (California District Court of Appeal, Coöperative Junk Co. of California vs. Board of Police Commissioners of the City of Los Angeles, 177 Pacific Reporter, 308.)

✣ ✣

Defects in Public Streets

Altho maintenance of a sewer system is a governmental function within the general rule that a city is not liable for negligence of its employes engaged in the performance of a governmental function, the rule will not be applied to exempt a municipality from liability for injury to a traveler along a sidewalk, resulting from an employe of the health department negligently leaving an iron sewer cover in such a position in the sidewalk as to constitute a dangerous defect. (Georgia Supreme Court, Cleveland vs. City of Augusta, 98 Southeastern Reporter, 345.)

✣ ✣

Material Man's Lien Against Bonds

Under the laws of Illinois, plaintiff, who furnished material to a contractor for the construction of a municipal sewer, had a lien against bonds issued to pay the contractor, and this lien may be enforced against one who bought the bonds with knowledge of the existence of plaintiff's claim. (Illinois Supreme Court, N. A. Williams Co. vs. McCarthy, 120 Northeastern Reporter, 485.)

✣ ✣

Street Improvement Assessments

Where a street giving access to warehouses, etc., was widened to make it adequate to carry both commercial and pleasure traffic, an owner of industrial property benefited by the improvement could not avoid liability for an assessment on the mere ground that except for pleasure traffic there would be no congestion. (Illinois Supreme Court, City of Chicago vs. Farwell, 120 Northeastern Reporter, 520.)



HOW are you cleaning your catch basins and sewers? In the old slow, expensive and disease-breeding way, with piles of filth on your streets? Or the "SECO" way?

The "SECO" Portable Pumping Apparatus cleans sewers and catch basins at a saving of 50 to 90% over the old way.

This apparatus is mounted on a special

KELLY-SPRINGFIELD CHASSIS

Write for Full Information and Catalogue

THE SPRINGFIELD ENGINEERING COMPANY

SPRINGFIELD **Bushnell Building** **OHIO**

Abatement of Nuisances

The power of a municipality to abate nuisances is limited to necessary destruction of property; the city is liable in damages for destruction of buildings declared to be, but not actually constituting, nuisances. An owner is entitled to a review in the courts of a determination by municipal authorities that given property has become a public nuisance. Where a nuisance caused by accumulation of filth about a stable can be abated by compelling removal of the filth, there is no power to condemn the stable building. (Texas Court of Civil Appeals, City of Forney vs. Mounger, 210 Southwestern Reporter, 240.)

Police Power Not Subject to Waiver

An application of the general rule of law that a municipal corporation cannot preclude itself from future exercise of police power is found in the decision of the Texas Court of Civil Appeals holding that the fact that a city permitted construction of a gasoline filling station will not preclude it from enforcing a subsequently adopted ordinance forbidding use of sidewalks as a means of access from a street to the station, if it appears that the ordinance is a reasonable measure to secure the safety of pedestrians using the walk and to enforce avoidance of congestion in street traffic. (Oriental Oil Co. vs. City of San Antonio, 208 Southwestern Reporter, 177.)

On the Calendar of Conventions

JUNE 9-10.—PHILADELPHIA, PA.
Pennsylvania Housing and Town Planning Association. Annual meeting. Secretary, John Ihlder, 130 South Fifteenth Street, Philadelphia, Pa.

JUNE 9-13.—BUFFALO, N. Y.
American Water Works Association. Annual convention. Secretary, J. M. Diven, 47 State Street, Troy, N. Y.

JUNE 10-11.—LA CROSSE, WIS.
Wisconsin Association of Commercial Secretaries. Annual convention. Secretary, F. W. Luening, Association of Commerce, Milwaukee, Wis.

JUNE 10-12.—SCHENECTADY, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual conference. Secretary, William P. Capes, 25 Washington Avenue, Albany, N. Y.

JUNE 13-14.—YORK, PA.
Pennsylvania Commercial Secretaries' Association. Annual meeting. Secretary, C. H. Heintzelman, Chamber of Commerce, Coatesville, Pa.

JUNE 14-17.—ATLANTIC CITY, N. J.
National Tuberculosis Association. Annual meeting. Assistant Secretary, Philip P. Jacobs, 381 Fourth Avenue, New York City.

JUNE 16-20.—SALT LAKE CITY, UTAH.
International Association of Rotary Clubs. Annual convention. Secretary, Chesley R. Perry, 910 South Michigan Avenue, Chicago, Ill.

JUNE 17-18.—ROCHESTER, MINN.
League of Minnesota Municipalities. Annual convention. Executive Secretary, E. L. Bennett, University of Minnesota, Minneapolis, Minn.

JUNE 17-18.—GREENWOOD, S. C.
Tri-State Water and Light Association of the *Carolinas and Georgia.* Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.

JUNE 17-20.—ST. PAUL AND MINNEAPOLIS, MINN.
American Society of Civil Engineers. Annual convention. Secretary, Charles Warren Hunt, 33 West Thirty-ninth Street, New York City.

JUNE 23-26.—KANSAS CITY, MO.
Southwestern Water Works Association. Annual meeting. Secretary, E. L. Fulkerson, 617 Washington Street, Waco, Tex.

JUNE 23-28.—ASBURY PARK, N. J.
American Library Association. Annual convention. Secretary, George B. Utley, Library of Congress, Washington, D. C.

JUNE 24-27.—LAKE PLACID, N. Y.
American Institute of Electrical Engineers. Annual convention. Secretary, F. L. Hutchinson, 33 West Thirty-ninth Street, New York City.

JUNE 24-27.—ATLANTIC CITY, N. J.
American Society for Testing Materials. Annual meeting. Assistant Secretary, C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

JUNE 24-27.—KANSAS CITY, MO.
International Association of Fire Engineers. Annual convention. Secretary, Chief James McFall, P. O. Box 611, Philadelphia, Pa.

JUNE 25-27.—LANSING, MICH.
League of Michigan Municipalities. Annual convention. Secretary, Robert T. Crane, University of Michigan, Ann Arbor, Mich.

JUNE 26-28.—WACO, TEX.
Texas Commercial Executives' Association. Annual meeting. Secretary, A. L. Burge, Tyler, Tex.

JUNE 27-28.—ATLANTIC CITY, N. J.
American Concrete Institute. Annual meeting. Secretary, Henry B. Alvord, 6 Beacon Street, Boston, Mass.

JUNE 29-JULY 5.—MILWAUKEE, WIS.
National Education Association of the United States. Annual meeting. Secretary, J. W. Crabtree, 1400 Washington Avenue, N. W., Washington, D. C.

JULY 14-26.—EAGLES MERE PARK, PA.
Summer School of Community Leadership, conducted by the American City Bureau. Fifth annual session. Address R. G. Stoddard, Business Manager of the American City Bureau, Tribune Building, New York City.

JULY 21-26.—WINONA LAKE, IND.
Indiana Commercial Secretaries' Association. Annual meeting. Secretary, Don R. Sidle, Chamber of Commerce, Vincennes, Ind.

AUGUST 12-14.—KINGSTON, ONT.
Union of Canadian Municipalities. Annual convention. Secretary, W. D. Lighthall, Montreal Trust Building, Montreal, Que.

AUGUST 26-28.—ALLENTOWN, PA.
League of Cities of the Third Class in Pennsylvania. Annual convention. Secretary, Fred H. Gates, City Clerk, Wilkes-Barre, Pa.

AUGUST 26-29.—TORONTO, ONT.
Fire Marshals' Association of North America. Annual convention. Secretary, John G. Gamber, Springfield, Ill.

NOVEMBER 12-14.—NEW ORLEANS, LA.
American Society of Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, 304 East Walnut Street, Bloomington, Ill.

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Honest manufacturing methods and carefully selected materials, alone will not make road-building machinery. It takes experience — experience in dealing with the most widely diversified problems. Experience that has proven what part or parts are subjected to the greatest strain.

The best materials and nearly a half-century of experience is the combination that has made Austin Western Machinery famous the world over as a "Super-Dependable" line.



The following Austin Western machines are giving profitable service in practically all parts of the world.

Road Graders
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Elevating Graders
Blade Graders
Dump Wagons
Street Sprinklers
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Motor Tandem Rollers
Motor Macadam Rollers

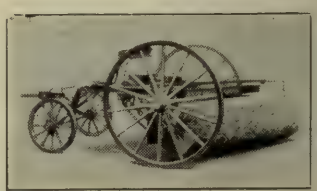
During the War the United States and Allied Governments purchased

Over 700 Austin Motor Rollers

More than ten times their combined purchases of all other rollers,

And at Higher Prices

WHY?



Our catalogue No. 18 which describes almost 250 sizes and styles of the above equipment, will be sent on request.

The Austin Western Road Machinery Co.

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NEW YORK CITY, BOSTON, MASS., MEMPHIS, TENN., DALLAS, TEX.
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ATLANTA, GA.



The City Manager Movement—Facts and Figures

By Harrison G. Otis
Secretary, City Managers' Association

A STUDY of tabulated data prepared for publication in the Fifth Yearbook of the City Managers' Associa- n discloses many interesting facts as to rapid spread of the movement and the e of men who are serving as managers. e tables list 140 towns and cities claiming ne variety of city manager government l 128 managers. The difference between se figures is due chiefly to the fact that eral cities have adopted the new plan become effective at some later date. The orts are compiled from information on nd May 15, 1919.

Three Types of Manager Plan

The manager plan became effective in re cities last year, during the war, than ring any previous year, and the year 1919 s fair to better this record. The figures e: 1908, 1; 1912, 2; 1913, 9; 1914, 17; 15, 24; 1916, 20; 1917, 17; 1918, 32; 1919 months), 12; 1920 (already adopted), 6; al, 140.

These figures include all cities and towns known to be operating under, or pledged to, any one of the three types of manager plan: commission-manager charter; modified manager charter, in which some fundamental principle is lacking; and ordinance-created manager plan, whereby the position is established only by an act of the local governing body. The tables show: 92 commission-manager charters; 10 modified manager charters; 38 ordinance-manager plans.

Near-Manager Plans Least Successful

Judged from the standpoint of "longevity," the attempts to create the city manager plan by local ordinance have met with but limited success. Out of a total of 57 such experiments, 19 have been discontinued after short trial—over 30 per cent failure. So far there has not been one case in which a commission-manager charter has been put into effect by vote of the people and then discontinued. More than that, a study of the tables reveals the fact that the majority of men serving as managers in ordinance-created positions are usually local

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Preserves Roads at least cost



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Road in front of our factory. Material: Bayport Stone. Dark portion in foreground, Saginaw Calcium treated and dustless; white portion, untreated.

SAGINAW CALCIUM costs less per square yard than any other road treatment i cluding water sprinkling. It is colorless and odorless, non-corrosive and non-con bustible, contains no oil or tar or sticky substance, is not poisonous and will n damage rubber, paint or horses' hoofs.

SAGINAW CALCIUM can be applied without any interruption of traffic and is bactericide. The effect of calcium is culminative, less is required the second seas than the first. It absolutely will not damage a roadway, it never produces a loos flaky or mealy surface but incorporates itself into the surface of the road and bin it, thus preventing raveling.

SAGINAW CHEMICAL CO., South Michigan Avenue, Saginaw, Mich

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TRUCKS

IN all city construction work the leadership of the F-W-D is undisputed. The F-W-D's equal distribution of power and load means power for every job—easy handling of the biggest jobs and tire and fuel saving that no rear drive truck can match. Literature on request.

The Four Wheel Drive Auto Company
Dept. 106 Clintonville, Wis.
Canadian Factory: Kitchener, Ontario

The boys from the Front will tell you



ien of little training and low salary. There re some notable exceptions, and where the ld-type commission form already exists, as i Pennsylvania, the addition of a manager y ordinance approximates the true com- iission-manager plan.

Choose Non-Residents as First Managers

Over 63 per cent of cities having com- iission-manager charters have selected ieir first managers from out of town. Fre- uently the successor has been a local man eveloped within the organization as an nderstudy. However, in the modified man- ger-charter cities, but 30 per cent of the anagers have been non-residents. The ime figure holds for the ordinance type wns. The following tables allocate the ties as to size and type, "C-M. ch." mean- g commission-manager charter; "Mod. ,," manager charter with some features cking; "Ord. pl.," an ordinance-created an. The average of the present salaries id the manager is added.

Plan	Over 50,000	20,000 to 50,000	10,000 to 20,000	5,000 to 10,000	Under 5,000	Total
M. ch...	11	16	25	22	18	92
od. ch...	1	1	3	2	3	10
d. pl....	2	0	3	11	22	38
Total ..	14	17	31	35	43	140
. sal...	$6,322	$5,116	$3,016	$2,200	$1,963	

High "Mortality Rate" of Managers

There have been 229 men appointed as ty managers. Of this number, 101 are o longer in the field. There have been 22 ises of promotion from one city to a rger; 4 managers are now serving their ird city. Of the 128 listed, only 44 have rved two years or over; 39, one year; , less than one year.

As there are different types of plans, so ere are types of managers. Membership the City Managers' Association has been osen as the arbitrary dividing line in the bulation. In a sense it serves to classify e types, as based upon the training, view- int and ambition of the individual man- er. All managers having received equally gent invitation to affiliate with the society, d the annual dues being but nominal sually payable by the municipality), such embership is a self-classifying shibboleth.

The facts presented in the tables are: te of becoming manager; age; education; rmer vocation; previous public service: sident or non-resident at time of appoint- ment; cities and dates served as manager; number of salary increases and present salary. Complete information has not been obtained in all cases, and where averages and per cents appear in the following sum- mary, only known data are considered. Bureaus of municipal research are ranked as colleges, and chambers of commerce as public service.

Summary of Manager Data

	Association Members	Non-Members	Total
Length of Service and Age			
Service			
Over 4 years.....	11	7	18
2 to 4 years.....	16	10	26
1 to 2 years.....	21	18	39
Under 1 year.....	15	30	45
Totals	63	65	128
Age			
Maximum age.....	62	63	63
Minimum age.....	28	30	28
Average age.....	39.5	45.6	41.7
Members, 63 Per Cent College Men			
College trained.....	38	2	40
Per cent.....	63%	3%	31%
Of All Managers, 48 Per Cent Engineers			
Engineers	40	12	52
Public utilities.....	3	4	7
Public works.....	1	3	4
Accounting and clerical	3	4	7
Newspaper	2	0	2
Chamber of commerce	1	2	3
Business	12	20	32
Per cent engineers...	64%	26%	48%
Majority Experienced in Public Service			
Previous public service			
Engin'ing and utilities	40	10	50
Finance and clerical..	6	10	16
Public safety.....	3	1	4
Public welfare.....	3	0	3
Elective offices.....	1	8	9
Total in pub. ser...	53	29	82
Per cent in pub. ser..	85%	67%	77%
Local Appointees Less Progressive			
Status when appointed			
Resident	28	43	71
Non-resident	34	4	38
Per cent non-resident.	53%	8%	35%
Promotions and Salary Increases			
Promotions			
To third city.....	4	0	4
To second city.....	13	1	14
Total promotions.....	17	1	18
Number of salary increases	51	17	68
Salaries Average Over $3,000			
Present salaries			
$5,000 and over.....	17	2	19
$3,000 to $5,000.....	27	3	30
$2,000 to $3,000.....	10	13	23
Under $2,000.....	7	32	39
Average	$4,021	$1,964	$3,075

—wrote the Sales Manager to the Road Commissio

LETTER N



"Keep in mind," he says, "that all-important element—the company behind the product."

IN addition to DEPENDABILITY, ECONOMY and SERVICE, the main factors that constitute successful tractor performance in the hands of the owner, keep in mind that all-important element in a satisfactory tractor purchase—the company behind the product.

"Naturally all else is of small consequence if the manufacturer's integrity and business policies are not of the highest.

"Eighty years of continuous manufacturing of power farming machinery is our record. Starting with only a blacksmith shop for a factory and two hands for capital, the factory buildings of the Advance-Rumely Thresher Company today cover 197 acres and its capital assets are $26,250,000.

"It is very manifest that no company could show such a record of progress and growth unless it was built upon the solid foundation of excellence of product and sound business methods.

"A business is only as permanent as the satisfaction and loyalty of its customers. We number them by the thousands. We believe that experimentation should be done at our expense and not the public's.

"We do not believe in, nor do we build upon extravagant claims. Our arguments for the worth of our product are not mere claims to go the other fellow one better. We claim only what our tractors deliver to the owner in every day performance—and we specifically warrant our product to live up to those claims.

"—that's not righteousness—it's just plain square dealing."

Advance-Rumely Thresher Company, Inc.
La Porte, Indiana

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A size for every road job

ADVANCE-RUMEL

Meter Testing an Economy

By H. M. Ely

Superintendent, Interstate Water Company, Danville, Ill.

At the water-works in Danville we have a well-equipped shop for repairing and testing meters. Ordinary meter repairing is done, such as renewing worn parts and changing gears to bring a meter up to registration. Meters requiring repairs beyond this are sent to the manufacturer. A card index is kept for each meter from the time it is received, showing the following data:

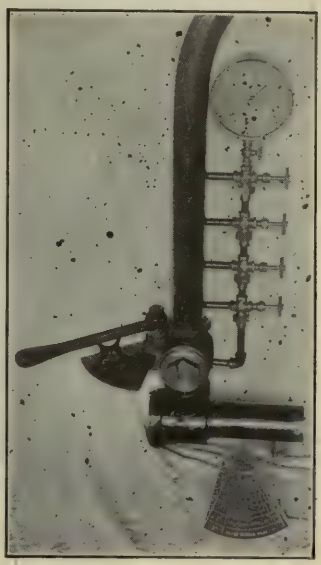
The record of original test or factory test
The size, make, date of setting and location
Record of subsequent tests
If meter is reset upon another service, date of removal and resetting, location, remarks, etc.
Nature of repairs made and cost

For meter testing a Clark machine which will hold six ⅝-inch meters, five ¾-inch meters, three 1-inch meters or one 2-inch meter is used. The Illinois Public Utility Commission requires that all meters be tested on one-eighth, one-half and full flow, with an error of not more than 4 per cent on the one-eighth and one-half flows and not more than 2 per cent on the full flow, the average error being not greater than 2 per cent. In order to test properly, the water had to run from the machine into the tank upon the scales and be timed, and the outlet valve adjusted to the desired flow. To eliminate this calibration each time, we suggested that a quick opening valve be substituted on the outlet pipe and a plate be attached with graduations corresponding to the proper opening of the valve for each required flow for each size meter. A pointer attached to the lever arm of the quick opening valve, and moving over the quadrant, can be set for any desired flow for any size meter. Our testing machine thus equipped enables us to test meters with a saving of time and without inconvenience.

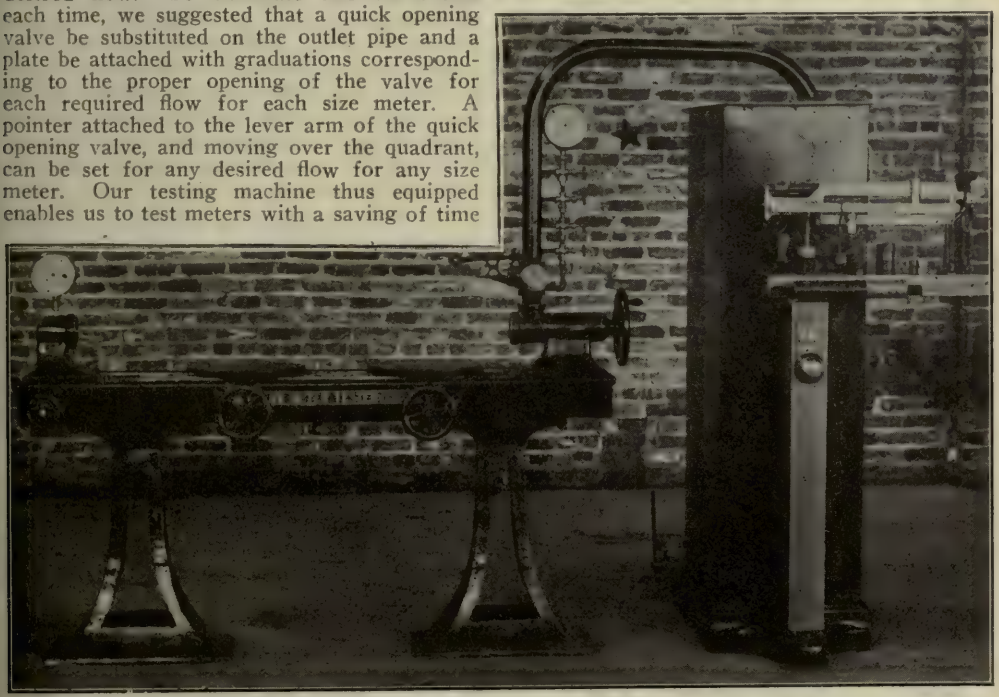
The Commission requires that no meter shall be in service without being tested at certain specified times and registrations.

We have found that by following these requirements we check many cases of under-registration due to the wearing of meter parts.

ACKNOWLEDGMENT.—An extract from the remarks of H. M. Ely at the meeting of the Indiana Sanitary and Water Supply Association, Indianapolis, Ind.



QUICK-ACTING VALVE DEVELOPED AT DANVILLE



METER TESTING MACHINE USED IN DANVILLE, ILL., WATER DEPARTMENT



Shale that Machine Cut at 3 Ft. Per Minute

Waterworks Men!

Look to your costs in these days of high prices and wages. The P & H Excavator purchased by the Erie, Pa., Water Dept. (by whom the record shown here was made) returned half its cost on four miles of mains.

P & H Equipment covers every phase of the job from the opening of the trench to getting the backfill back quickly and compactly. Send for general catalog.

PAWLING & HARNISCHFEGER CO.

MILWAUKEE, WISCONSIN

660 Ft. In 3 Hour

During 1915, considered ordinary year, the city laid 25,(ft. of 6- and 12-in. mains in ha excavated trenches at a labor c for digging, laying and back-fill of 28.8c. a foot for the smaller s 36.08c. a foot for the larger si Much more pipe was laid in 1(and this year because of the ra growth of the city. While co plete unit costs for the last yea work have not yet been compil it is known that rising wa caused considerable increase o those of 1915. Records for 10,(ft. of 6-in. main laid at one ti last year show a total labor cos 37.1c. per foot, of which digg alone represented 19c. with co mon labor 27½c. an hour. T trench was in clay, with shale the bottom. As compared w this, the first performance with trenching machine, excavating 1620 ft. of line, was accomplish at a fuel and labor cost of $132. or 8.2c. per foot for actual diggi This was in gravel which requi sheeting, the cost of which is cluded in the above figure. another occasion, in digg through cut-over land, where ma large but partly rotted stumps w cut through, 682 ft. of trench v dug in four hours, at a cost $7.55 for three men and 15 gal gasoline—only 1.1c. per foot. Oct. 5 the machine made its sp record of 660 ft. in three hours, $3.02 for gasoline and $1.88 the wages of the engineer helper being charged to the ope tion. This was about ¾ of a c per foot. Both trenches were shale at the bottom.

P&H excavators, back-fillers, tampers.

Municipal and Civic Publications

umping Machinery.

ARTHUR M. GREEN, Jr. John Wiley & Sons, New York. 1919. viii + 703 pp. Illustrated. Second Edition. $4.00

A thoro treatise on the question of modern pumping, ginning with an interesting chapter on the historical velopment and recent history of pumping, followed by ll-written chapters on modern reciprocating pumps, nplex pumps, dynamics of water, design of parts, test pumping engines, high-duty pumps and water-works tions, special pumping machinery, injector and pulso- ters, air-lift pumps and pneumatic pumps, centrifugal mps and mine pumps. A book well worth while for the ter-works and city engineer.

andbook of Fire Protection.

EVERETT U. CROSBY, HENRY A. FISKE, H. WALTER FORSTER. D. Van Nostrand Company, New York. 1919. Sixth Edition. xxxv + 757 pp. Diagrams, plans and tables. $4.00

Twenty-two years after the original publication of this, first fire protection handbook issued in the English guage, the authors have published the sixth edition of s valuable volume. Many timely chapters have been led, a number of chapters enlarged, and many new strations and the graphic presentation of tabular data ended more generally thruout the book. One of the st valuable publications on fire protection and pre- tion in the English language.

ectrical Fire Hazards.

THOMAS HENRY DAY. The Insurance Institute of Hartford, Inc., Hartford, Conn. 1918. 120 pp. Illustrated. $1.00

This paper-covered book contains a series of lectures ivered before the Insurance Institute of Hartford in nection with the fire branch, and includes a complete cussion of different types of electrical fire hazards and methods of combating and overcoming them.

ocational Civics.

FREDERICK MAYOR GILES and IMOGENE KEAN GILES. The Macmillan Company, New York. 1919. x + 252 pp. Illustrated. $1.30

This textbook, designed for pupils of high school grade, sents a general survey of the various types of occu- ions in order to help each pupil (1) to make a wise ice of a vocation in accord with his abilities and de- s, (2) to prepare intelligently for his chosen occupa- , and (3) to perceive what relation his chosen life- k bears to the work of the world. A wide variety of ations is discussed, each type of work being handled m the standpoint of its usefulness to society, its op- tunities for financial advancement or social service, personal qualifications necessary for success, and the liminary preparation which is required. The preface es, "As one's work in the world is so closely allied h his loyalty as a citizen, it seems most natural to this textbook 'Vocational Civics.'"

fice Management, Its Principles and Practice.

LEE GALLOWAY, Ph.D. The Ronald Press Company, New York. 1919. xxxi + 701 pp. Illustrated. $6.00

A comprehensive treatise on organization, arrangement operation of the modern office, with special considera- of the employment, training and payment of office kers. A valuable reference work in the municipal chamber of commerce field.

Waterproofing Engineering.

JOSEPH ROSS, B.S., C.E. John Wiley & Sons, New York. 1919. x + 442 pp. Illustrated. $5.00

This volume fills the long-felt need of a complete discussion of methods and types of waterproofing. Waterproofing engineering is not taught in any college, and the only literature on the subject is published by manufacturers. This volume covers very thoroly the subject of the need and function of waterproofing, systems of waterproofing, impervious roofing, waterproofing expansion joints in masonry, waterproofing materials, implements and machinery, technical and practical tests on waterproofing and cost data. A valuable publication for the municipal engineer.

Health Education in Rural Schools.

J MACE ANDRESS, Ph.D. Houghton Mifflin Company, New York. 1919. xii + 321 pp. 24 illustrations. $1.60

This book is a "serious and thorogoing attempt to treat the subject of health education from the rural teacher's point of view" and presents a wealth of carefully thought-out plans for the training of rural school children in habits of personal hygiene and for inspiring them to improve the sanitation of the schoolhouse and grounds and of the community in general. The following chapter headings give an idea of the wide scope of these plans: Why Health Should Be the First Aim of the School, Health Conditions in the Country, Getting Children to Form Health Habits, Studying the Health of the Children, Securing the Coöperation of Parents and Community, Planning the Course of Study in Hygiene, The Water-Supply and Sewerage, War on Flies, Mosquitoes, Rats and Mice, Heating and Ventilation, Play and Physical Education, Posture and Health, Hygiene of Nose and Throat, Care of the Teeth, Eyes and Ears, Hygiene of Digestion and Foods, and Measurement of the Teacher's Work in Hygiene. The class exercises at the end of each chapter lead the teacher to base her work on first-hand studies of actual conditions in her district and to measure her year's progress by the number of changes for the better that have been made in those conditions.

The Food Crisis and Americanism.

WILLIAM STULL. The Macmillan Company, New York. 1919. viii + 135 pp. $1.25

Our Town and Civic Duty.

JANE EAYRE FRYER. The John C. Winston Company, Philadelphia. 1918. xii + 259 pp. $.60

Important Advances Toward Eradicating the Billboard Nuisance.

A 32-page pamphlet containing a resumé of desirable legislative action and publicity measures to rid residential and other districts of billboards, and citing recent decisions of the United States Supreme Court which have resulted in a great advance in the work of billboard elimination. (Issued 1919 by the American Civic Association, 914 Union Trust Building, Washington, D. C.)

Annual Report of Forest Commissioner of Newton, Mass.

For the year ending December 31, 1918. Of especial value to park commissioners and all others interested in the preservation of our shade trees are the printed forms for the making of tree reports and records and the report on the oak-leaf roller, giving a successful method of overcoming this insect pest. 43 pp. Illustrated. (Apply to W. W. Colton, Forest Commissioner.)



WELCOME HOME

What could better greet the boys you are welcoming home from their glorious victory overseas, than a new Walworth Steel Flag Pole erected in the little park where they played as children?

WALWORTH STEEL FLAG POLES

are made in heights of 20 to 100 feet above the ground. We furnish free, architectural detail drawings for building an artistic concrete base, and will make an attractive bronze memorial tablet to order if desired.

The Patent Non-Fouling Ball-Bearing Top prevents the Flag from becoming wrapped around the pole, no matter how strong the wind, nor how much nor how suddenly it changes direction.

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801 E. First Street, Boston, Mass.

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Report of an Investigation of the Akron Industrial Salvage Co.

This 20-page report discusses the community incorporated waste-saving experiment which has been successfully carried on for a year in the city of Akron, Ohio, and demonstrates beyond question that the plan is both practicable and profitable. A few pages are devoted to the national incorporated waste-saving program of Great Britain. 1919. (Apply for copies to H. L. Baldensperger, Chief, Waste-Reclamation Service, Department of Commerce, Washington, D. C.)

Motor Transportation for Rural Districts.

Bulletin No. 770 of the U. S. Department of Agriculture aims to show the important role that can now be played in rural districts by motor truck transportation, provided that its limitations are carefully considered. The pamphlet names the difficulties that must be met, and shows how they can be overcome. 32 pp. Issued May 5, 1919.

The Soldier Citizen and His Home Town.

A live little booklet issued "a the purpose of arousing in the homecoming soldier "a determination to make the record of American citizenship at home match the record of the American army abroad—which always went forward," and also of showing the soldier boy how to find out what his home town needs and then how to go to work to get it. 32 pp. (Published by Association Press, 347 Madison Avenue, New York City.)

Sewage Disposal Problem of New Haven.

A report describing the New Haven Experiment Station and discussing and tabulating the results of a large number of experiments in the activated sludge process, the Miles acid treatment, chlorination and other processes. 97 pp. 1918. (Write to Frederick L. Ford, City Engineer, New Haven, Conn.)

Study of Poverty in Baltimore and Its Causes.

This report includes an introductory statement by the Advisory Committee and a study of social statistics in Baltimore for the years 1916 and 1917. The study was undertaken at the request of The Alliance of Charities and Social Agencies and financed by municipal appropriation. 90 pp. (Issued 1919 by the Bureau of State and Municipal Research, 702 Fidelity Building, Baltimore, Md.)

Municipal School Feeding.

An article by John C. Gebhart, Executive Secretary of the New York School Lunch Committee, reprinted from the March, 1919, issue of the National Municipal Review (Philadelphia, Pa.). 5 pp.

Report of Housing and Social Conditions in the Ann Street District of Los Angeles.

38 pp., including numerous illustrative charts. (Published by the Los Angeles Society for the Study and Prevention of Tuberculosis, 528 Chamber of Commerce Building, Los Angeles, Cal.)

The Housing Problem in Lackawanna County, Pa.

A reconstruction program for Lackawanna County, Pa., planned after a careful consideration of a number of possible causes of the congestion in that locality. Issued December, 1918. 28 pp. (Write to Eugene H. Fellows, Executive Secretary, Pennsylvania Council of National Defense and Committee of Public Safety of Lackawanna County, Scranton, Pa.)

City Planning for Syracuse.

Report of the work of the City Planning Commission for the last four years. 18 maps and 2 other illustrations. 1919. 48 pp. (Apply for copies to Miss Adele P. Glauvelt, Secretary, City Planning Commission, Syracuse, N. Y.)

The Social Unit Organization of Cincinnati.

This pamphlet presents the report of an investigation of the Cincinnati Social Unit Organization for the purpose of ascertaining whether the organization had been used for the dissemination of socialistic or other political doctrines. No evidences whatever of the preaching of any political or economic program were found. 8 pp. Price 5 cents. (Copies may be obtained by addressing the Helen S. Trounstine Foundation, at 731 West Sixth Street, Cincinnati, Ohio.)

Health Conditions and Health Service in St. Paul.

A report of the health conditions and health service in St. Paul undertaken by the Amherst H. Wilder Charity. The report includes chapters on Vital Statistics, Sanitation, Health Agencies (public and private) and Conclusions. 203 pp. 1919.

Artistic War Memorials.

A beautifully illustrated booklet entitled "War Memorials," by Ernest Alan Van Vleck, makes a plea for "monuments that should speak to the passer-by in terms of exalted idealism." Beautiful photographs presenting inspiring examples of what has been done in concrete and cut stone adorn the pages of the booklet, and the author cites as worthy of imitation many splendid models, in both the Old World and the New, of sculptured groups, monuments, memorial towers, drinking fountains, bridges, community houses and war museums. 12 pp. (Copies obtainable free of charge from the Atlas Portland Cement Co., 30 Broad Street, New York City.)

More Helps for Cities Planning Memorial Buildings.

Bulletin No. 3 of the National Committee on Memorial Buildings contains an article entitled "What Form Should a Community House Take?" in which are outlined: (1) the type of community survey which should precede the planning of the building and (2) three suggested forms of organization for local memorial building associations. Bulletin No. 4 contains an article on "Community Houses as War Memorials" and a letter from Franklin K. Lane, Secretary of the Interior, endorsing the movement. Eight pages in each bulletin. Price per copy, 5 cents. (Address National Committee on Memorial Buildings, 261 Broadway, New York.)

The Location and Design of War Memorials.

This little 8-page pamphlet, which has been prepared by Andrew Wright Crawford and J. Horace McFarland, of the American Civic Association, stresses the importance of selecting a suitable location and of securing expert advice, both as to design and location, before attempting the erection of a war memorial. The suggestions made in the booklet regarding types of memorials and an appended list of important references should be of considerable help to communities seeking light on this subject.

"What is the Ward Going to Do with Toronto?"

A report on undesirable living conditions in one section of the city of Toronto which are rapidly spreading to other districts. This pamphlet of 75 pages contains many interesting illustrations that show graphically the evil effects of lack of open spaces, the general run-down condition of buildings, streets and sidewalks, and the fire hazards. It also shows the resulting low real estate values, character of housing, the sanitary defects, the conditions of tenantry, overcrowding, the number of condemned buildings, and an interesting analysis of the family history of the more prominent members of the district. (Apply to the Bureau of Municipal Research, Bank of Hamilton Building, Toronto, Ont.)

Playground Facts.

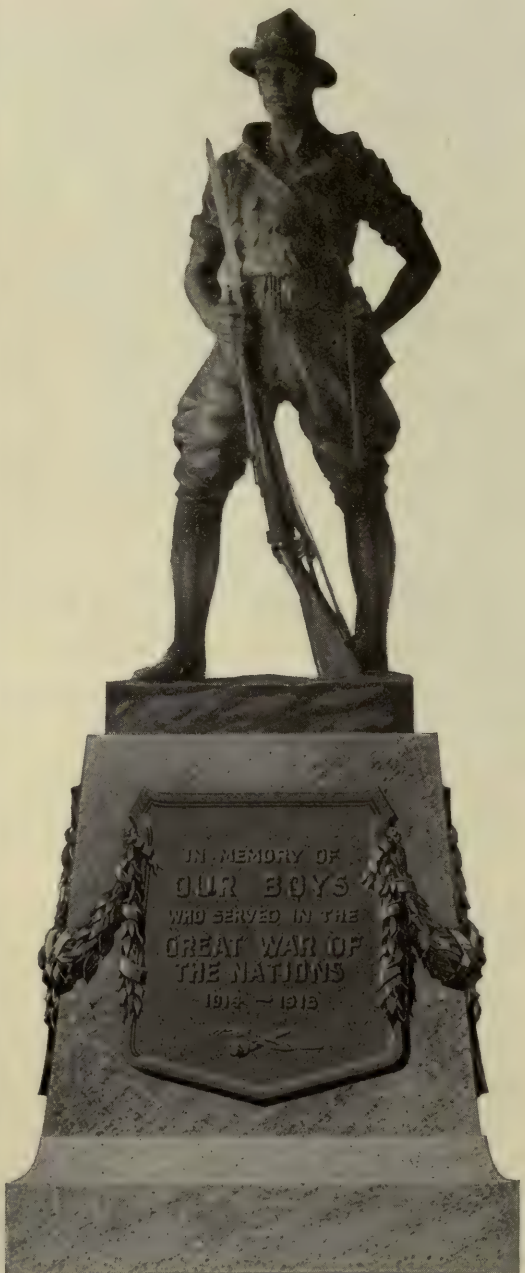
The securing of information for the 1918 Year Book of the Playground and Recreation Association of America involved correspondence with 1,700 cities, of which 1,121 sent information regarding the status of their playground and neighborhood recreational center work. The results of this investigation are published in a 48-page report which is full of interesting and significant data regarding the progress of playground work during 1918. The general report of progress is followed by a list of the officers of recreation commissions and associations in the United States and by 27 pages of tables showing "Playground and Recreation Center Statistics for 1918." 40 cents. (Published by the Playground and Recreation Association of America, 1 Madison Ave., New York City.)

Public Ownership of Street Car Lines in Chicago.

This pamphlet presents the suggested constructive program adopted by the Chicago Municipal Ownership League (affiliated with the Public Ownership League of America) and submitted to the City Council and people of Chicago. 16 pp. (Published April, 1919, by the Chicago Municipal Ownership League, 1439 Unity Building, 127 No. Dearborn Street, Chicago, Ill.)

Rural Home Sanitation.

This comprehensive and valuable article by V. M. Ehlers and Louva G. Lenert, Sanitary Engineers, points out where sanitary conditions in rural houses and outbuildings need to be improved and offers a large number of suggestions as to methods of procedure in making such improvements. Many drawings and diagrams help in making these suggestions clear to the reader. 39 pp. 1919. (Publication No. 2 of the Texas State Board of Health, Austin, Tex.)



Suggestion for Municipal or County Monument

Soldier and Tablets Cast in United States Standard Bronze

AN IMPERISHABLE MEMORIAL IN BRONZE AND GRANITE

Monuments and Bronze Tablets for City and County Memorials:

HONOR ROLLS SERVICE ROLLS
INDIVIDUAL MEMORIAL TABLETS
In Solid Cast United States Standard Bronze

For Schools, Colleges, Churches, Lodges, Clubs, Banks and business organizations.

BRONZE LIVES FOREVER

It is for this reason when a memorial is to be erected to the men who served in the World War, bronze is universally chosen by those who know, as the material to be used.

The production of bronze memorials and statues is a highly specialized field of art which has been limited to a skillful few in every age. In the United States, at the present time, the Flour City Ornamental Iron Company, by its years of successful work, has established its pre-eminence in the production of bronze memorials, and stands today as a leader in this field of art, with a staff and production facilities not surpassed in this country.

Bronze work of any design or size can be handled in the shortest time consistent with the highest class of workmanship. Some idea of the artistic skill and facilities of this organization may be gained from the fact that it produces not only bronze memorial tablets and honor rolls, but bronze statuary, bas-relief, and municipal and county memorial monuments, as well as ornamental bronze work for Federal, State and Municipal Governments and Public buildings.

Write or wire for further details and our art brochure Bronze—The Imperishable Memorial. Give nature of memorial desired. Where tablets are wanted, give approximate number of names.

The Flour City Ornamental Iron Co.

27th St. and 27th Ave So. ***Dept. M.*** **Minneapolis, Minn.**

w American Citizens Govern Themselves.

Charles A. Beard, Director of the Bureau of Municipal Research, New York City. A valuable little handbook the newly made voter, explaining in simple, clear style functions of federal and state government and the r's individual responsibility. 14 pp. 1919. (Published by Association Press, 347 Madison Avenue, New City.)

izenship Training.

yllabus on the teaching of civics for use in the elementary schools of Iowa. 1918. 32 pp., illustrated. ued by the Department of Public Instruction, Albert Devoe, Superintendent, Des Moines, Iowa.)

ncinnati School Garden Report.

ual report for 1918. 32 pp. Illustrated. (Apply to and W. Guss, Director of School and Home Gardens, Cincinnati, Ohio.)

nual Fiscal Report of Fredericksburg, Va.

ort of receipts and expenditures for the year ending ember 31, 1918. 48 pp. (Apply to Levin J. Houston, City Manager, Fredericksburg, Va., for copies of this rt.)

nual Report of Commissioners of Grand Junction, Colo.

the fiscal year ending December 31, 1918. 29 pp. rite to Charles K. Holmburg, City Clerk, Grand ction, Colo.)

nual Report of Department of Engineering of Hartford, Conn.

eport of the work for the year ending March 31, 1918, he Department's divisions of Sewers, Bridges, Paving, vey and Street, Private Drains, Chemist and Testing, ce and Traffic Relief, with appended tables giving a of all sewers laid during the year, together with data cerning their construction and cost. 44 pp. (Apply to partment of Engineering, Hartford, Conn.)

port of City Water Department of Billings, Mont.

the year ending June 30, 1918. Tables of receipts and enditures, the Superintendent's report of the year's mplishments, tables of water department statistics four full-page photographs of equipment are included. pp. (Write to Board of Water Commissioners of Billings, Mont., for copy of this report.)

nual Report of Water Department, Kalispell, Mont.

year ending December 31, 1918. This 32-page report udes general report of the Superintendent and individual reports on the sanitary qualities of the Kalispell nicipal water supply, fire protection, and receipts and bursements. Numerous comparative tables and active photographs add clarity and interest to the report. (Issued by Water Department, Kalispell, Mont.)

nual Report of City of Waltham, Mass.

year ending January 31, 1919. Including the Mayor's ual message, annual reports of all departments and the t annual report of the City Manager. 270 pp. Illused. (Write to Richard Steele, City Clerk.)

nual Report, Department of Public Works, Woburn, Mass.

year ending December 31, 1918. 40 pp. (Apply for ies of this report to H. V. Macksey, Superintendent of blic Works.)

port of City Auditor of San Diego, Cal.

the year ending December 31, 1918. 38 pp. (Write H. L. Moody, City Auditor.)

oceedings of the 15th Annual Convention of the Union of Manitoba Municipalities.

ld at Winnipeg, Man., January 21-23, 1919. 53 pp. ddress Robert Forke, Secretary-Treasurer of the Union, estone, Man.)

2d Annual Report of Town of Stoughton, Mass.

r the year 1918. 304 pp. and index. (Apply to George Wentworth, Town Clerk, for copies of this report.)

A Brief Health Bibliography.

Under the title, "Guide Posts on the Road to Health," the Municipal Reference Library of New York City has compiled and published a brief list of trustworthy books on the following aspects of the health problem: Health and Sanitation, Food and Cooking for the Sick, Aid for the Injured, Bacteria and Disease, Nursing and Public Health Nursing, Children—Care and Hygiene, and Sex Hygiene and Instruction. Issued April 30, 1919. 10 pp. (Apply to Sara L. Halliday, Librarian, Public Health Division, New York City.)

The States and Child Labor.

This pamphlet summarizes briefly the restrictions as to ages and hours placed by the various state laws upon the employment of children in factories, stores and mines, and also presents a list of the compulsory school-attendance laws of the different states. 46 pp. (Children's Year Leaflet No. 13, issued by Children's Bureau, U. S. Department of Labor, Washington, D. C.)

Pasadena's Municipal Lighting Works Department.

Eleventh annual report for the year 1917-1918. Graphs and illustrations showing developments in the municipal lighting department. 32 pages. (Apply to C. W. Koiner, General Manager, Municipal Lighting Works Department, Pasadena, Cal.)

Birmingham Public Works Report.

Report of the City Engineer and Surveyor, 1917-18. A record of the year's activities in surveying, sewage and waste disposal, lighting, city planning and housing, and other public works in Birmingham, Ala. 1918. 50 pp. (Apply to Henry E. Stilgoe, City Engineer and Surveyor, Birmingham, Ala.)

Year Book of the Town of Milford, Conn. 1918.

Including yearly reports of the Board of Selectmen, Tax Collector, Board of Assessors, Town Treasurer, Police Commissioners, Fire Commissioners, Milford Cemetery Association, Taylor Library, Health Officer, Finance Board, etc. 103 pp. (Apply to William A. Rose, Town Clerk.)

Report of Water Commissioners of Johnstown, N. Y.

41st annual report, filed with the City Clerk January 10, 1919. 46 pp. + illustrated supplement. (Apply to Grover E. Yerdon, City Clerk.)

Report of the Bureau of Engineering of Albany, N. Y.

For the year ending October 31, 1918. 22 pp. and attached tables. (Apply to Frank R. Lanagan, City Engineer, Department of Public Works, Albany, N. Y.)

Annual Report of Roads Engineer, Baltimore County, Md.

For year ending December 31, 1918. 60 pp. (Write to William G. Sucro, Baltimore County Roads Engineer, Towson, Md.)

First Annual Report of East Cleveland, Ohio, Under Commission-Manager Plan.

For year ending December 31, 1918. 40 pp. (Apply to C. M. Osborn, City Manager, for copies.)

Annual Report of Engineer Department of District of Columbia.

For year ended June 30, 1918. 172 pp. (Apply to Brig. Gen. John G. D. Knight, retired, Engineer Commissioner, District of Columbia.)

Annual Report of Department of Street, Sewer and Catch-Basin Cleaning of Cincinnati.

For the year 1918. 29 pp. (Apply to Fred Maag, Superintendent of Street Cleaning Department.)

Four Years of Municipal Administration in Mason City, Iowa.

April, 1915, to April, 1919. 32 pp., illustrated. (Apply to City Clerk, Mason City, Iowa.)

Annual Message of Mayor of Los Angeles, Cal.

Delivered January 2, 1919. 69 pp. (Apply for copies to Frederick T. Woodman, Mayor.)

CINCINNATI CHOOSES No. 10,411



Design 10411

CINCINNATI recently decided to bring its street lighting "up to the mark". A careful investigation of many types of street lighting standards led to the selection of our design No. 10,411. The order calls for almost 1000 of these beautiful and economical standards. The best illumination and artistic effects are secured in this utilitarian standard and lamp.

Send for our new catalog F illustrating and describing this and many other designs.

Electric Railway Equipment Company

CINCINNATI OHIO

New York Office, 30 Church Street

anizing the Management of Industry.

brief article of the above title, Sam A. Lewisohn, uthor, emphasizes the fact that a factory man- needs to possess, in addition to his technical train- broad human sympathy and an understanding of the n methods of handling labor. "This points," he "to the need of introducing into the curriculum of technical institution thoro courses in sociology and modern technique and methods of handling labor." (Reprinted February, 1919, from *The Proceedings* Academy of Political Science in the City of New Columbia University, New York City.)

al Welfare Work in Long Beach, Cal.

annual report. 1919. 8 pages of descriptive matter, graphs and diagrams. (Issued by Social Welfare u, Long Beach, Cal.)

Italian in Chicago.

is one of a series of four studies which have been of four important race-groups in Chicago—the n, the Polish, the Scandinavian, and the Negro—by ureau of Social Surveys of the Department of Pub- elfare. As stated in the foreword, it is believed that tudy, interpretation and presentation of accurate and ific facts and figures pertaining to the environment, and economic life of these groups give to the city an intelligent background for its various programs of community life." 32 pp. (Apply to Miss Louise O. Rowe, Commissioner, Department of Public Welfare, Chicago, Ill.).

"The Cost of Clean Clothes in Terms of Health"

is the title of a pamphlet which contains the results of investigations of laundries in New York City and of the effects of laundry work upon the health of the workers. The booklet contains a list of recommendations for each laundry department, designed to protect the health of the working force, and a list of resolutions governing the conduct of laundries that have been adopted by the New York Department of Health. 96 pp. (Procurable, on payment of 50 cents, from Bureau of Preventable Diseases, Department of Health, New York City.)

Survey of Department of Finance, Troy, N. Y.

Prepared by the Bureau of Municipal Research and published August, 1918, by the Chamber of Commerce, Troy, N. Y. 144 pp. City organization chart attached.

Connecticut State Parks.

Report for the two fiscal years ended September 30, 1918. 36 pp + 12 full-page photographs. (Apply to Lucius F. Robinson, Chairman, State Park Commission, Hartford, Conn.)

Methods · Materials · Appliances

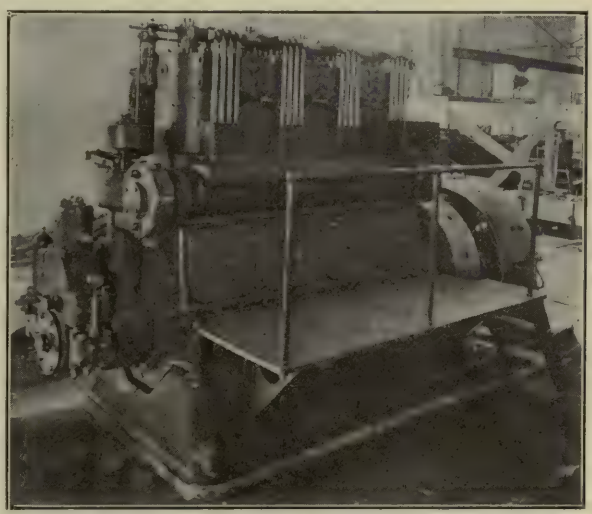
News for Boards of Public Works, Engineers, Contractors, Purchasing Agents and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

New Type of Heavy-Duty Engine

A new heavy-duty oil engine, embodying the ell-established and successful methods used Europe for many years, is now being manu- ıctured by the Pittsburgh Filter & Engineer- ıg Company, Pittsburgh, Pa. These motors ombine the economy of the Diesel type engine ith mechanical simplicity, and their use is articularly recommended where service and conomy are expected. The motor entirely independent of any car- uretor, hot bulb or plate, spark lug, high-pressure air compressor nd storage tanks, fuel pump or pray valve. The compression is arried to approximately 500 pounds er square inch, and the motor is tarted from cold without pre-heat- ıg and is put under full load in few seconds. These motors will urn any grade of the cheaper oils, rom kerosene to the heaviest of uel oils, the same fuel serving for tarting the motor.

In this new type of engine, the M. V.," the aim has been to com- ine simplicity of construction with ccessibility, and every effort has een made to reduce the operating ttention. This engine is of the in- losed type, and the design has dhered as far as possible to the ıoroly tested practice of modern igh-speed Diesel engines.

In starting this engine compressed air at about 125 pounds pressure is admitted to each cylinder thru an air starting valve. The amount of fuel required for operation is regulated by a governor mounted on a vertical shaft. The lubricating system is complete and entirely automatic, providing for the use of two grades of lubricants for the pistons and bearings, respectively.



ENCLOSED TYPE OF HEAVY-DUTY OIL ENGINE

Indicating, Recording, Integrating Flow Meter.



Wasted Steam—Wasted Coal—Wasted Mon

G-E Flow Meters will assist in preventing these wastes—

on boilers, they show up bad firing, unequal boiler outputs, dirty tubes, holes in fires, incorrect drafts, etc.

on steam lines to departments and processes, they show up leaks in pipes, wasteful uses of steam and make it possible to determine actual costs of steam used,

on feed water lines, they give the amount of water delivered to the boilers, from which the evaporation factor can be computed.

All G-E Flow Meters are simple, reliable and accurate, requiring only reasonable care for satisfactory operation.

Write our nearest office for the Booklet "A Guide to Boiler Economy" and Bulletin 46501B, describing G-E Flow Meters for all applications.

General Electric Compa

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*Southwest General Electric Company. For CANADIAN BUSINESS refer to Canadian General Electric Company, Limited, Toront
GENERAL FOREIGN SALES OFFICES: Schenectady, N. Y.; 120 Broadway, New York City; 83 Cannon St., London, E. C. Englan

Pressure Distributor for ad Oiling

The Monarch pressure distributor, as shown the illustration, is an improved design nufactured by the Good Roads Machinery , of Kennett Square, Pa., to meet more ly the actual working conditions in the ap- ation of oils and tar products which the ny years' experience of the company has wn are likely to be encountered. All wood struction has been eliminated, thereby ob- ting danger or damage to the machine by



IL DISTRIBUTOR AT WORK ON STREET

. The tank is made of sheet steel plates 6-inch thick (head plates ¼-inch thick) ed and riveted with asbestos packed riveted nts. The tank capacity is 600 gallons. The ne on the top of the tank at the rear facili- es loading. The outlet pipe is placed at the tom of the tank, thus permitting the com- te emptying of the tank. The heating device sists of a firebox designed to burn wood or specially arranged flue spaces, and a smoke e, so situated as to furnish additional heat- area. As it has been found that it is some- es necessary to heat materials very rapidly, oil-burning attachment has been added to machine. The amount of material applied n be regulated as desired om 1/10 to 4/10 of a gallon r square yard of surface, and n be applied under a pressure rying from 5 to 25 pounds r square inch. A set of elve ¼-inch and a set of -inch nozzles are furnished th each Monarch distributor. ch machine is equipped with 2-inch rotary pressure pump with 2-inch et and discharge pipes. The running gear, the platform spring gear type, is equipped th heavy steel wheels and broad tires. The eels run on roller-bearing axles, making it ssible for a single team to haul the outfit, ded, over ordinary grades. This machine n be furnished in auto truck style if sired.

Motor Truck Firm Builds Canadian Plant

The Four Wheel Drive Auto Company, of Clintonville, Wis., manufacturer of F. W. D. trucks, has definitely decided to build a Canadian plant at Kitchener, Ont. The site is to be selected and building operations commenced immediately. The first building will be about 200 x 120 feet, and additions will be made as business warrants.

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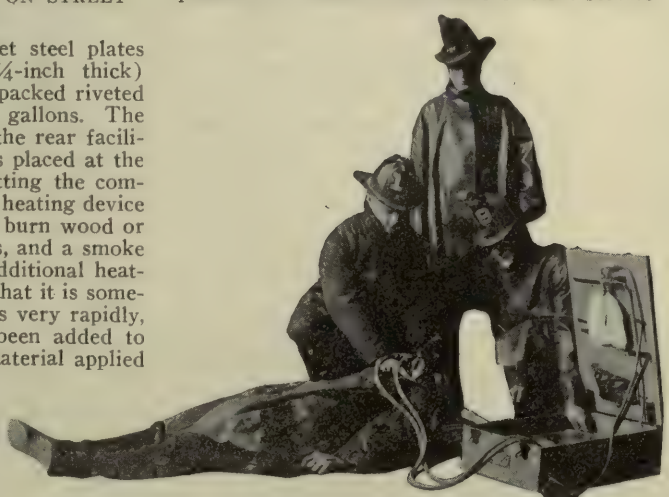
James R. Cravath Takes Partner

James R. Cravath, electrical and illuminating engineer, of Chicago, and F. F. Fowle, recently a receiver of the Central Union Telephone Company, have formed the firm of Fowle & Cravath, 312 South Dearborn Street, Chicago, Ill. The work of the firm will include, as in the past, street lighting and public utility rate matters, as well as the economical operation of municipal plants.

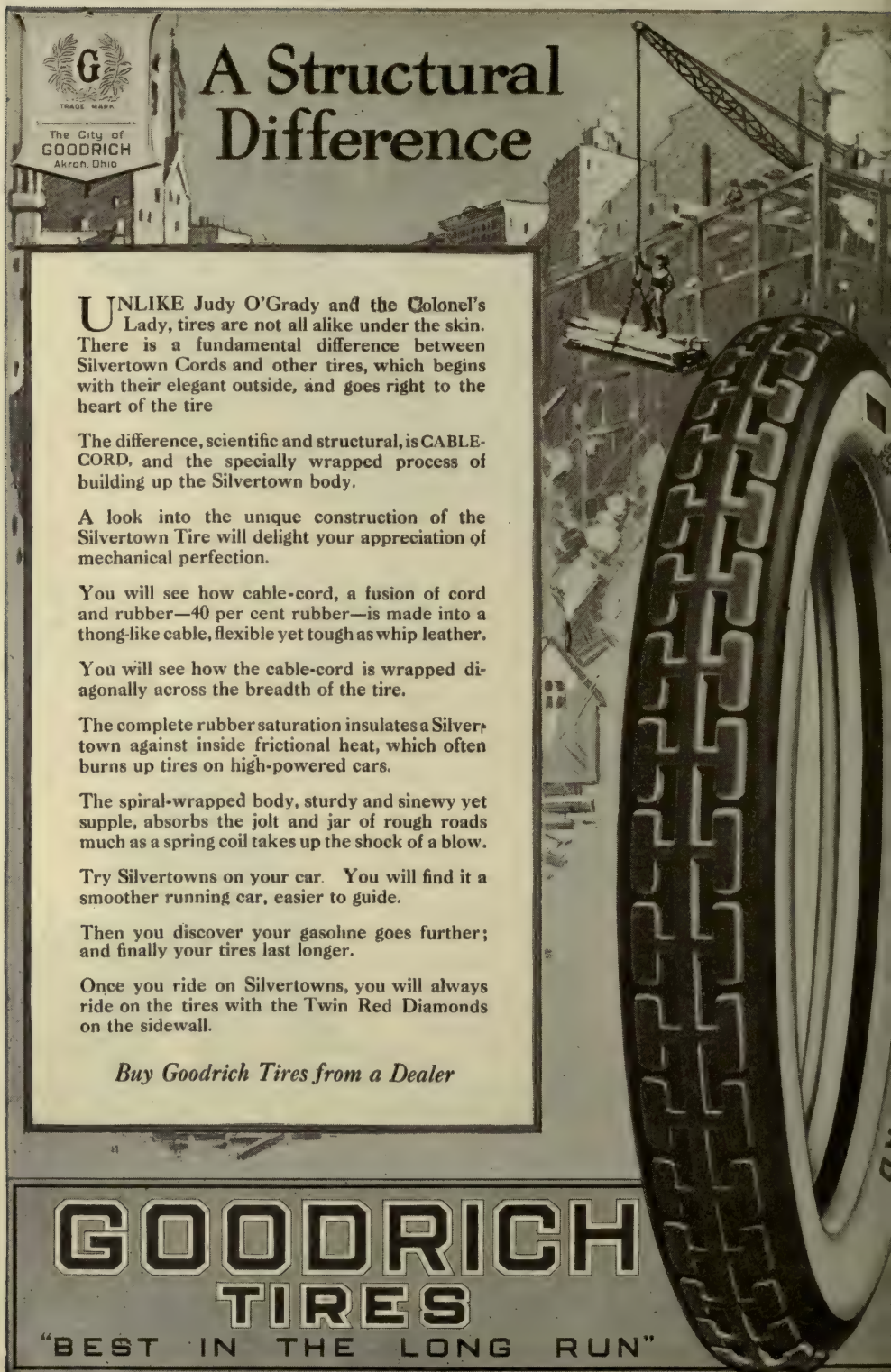
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The Pulmotor

Among the various types of oxygen apparatus for saving life, the American Atmos Corporation, formerly Draeger Oxygen Apparatus Co., of Pittsburgh, Pa., has perfected none of wider value than the Pulmotor. The accompanying illustration of firemen resuscitating the victim of a fire shows one of the most frequent and important uses of this apparatus. It renders much more efficient service than any manual method of artificial respiration. The Standard Type is absolutely automatic, and the operator is not called upon for physical exertion but gives his attention to the patient. The Pulmotor creates respirations identical in volume and cadence with the natural normal breathing of the patient, regardless of his age or physical development. It furnishes him with air enriched with oxy-



THE PULMOTOR IN USE BY FIREMEN TO REVIVE AN INJURED PERSON



A Structural Difference

UNLIKE Judy O'Grady and the Colonel's Lady, tires are not all alike under the skin. There is a fundamental difference between Silvertown Cords and other tires, which begins with their elegant outside, and goes right to the heart of the tire

The difference, scientific and structural, is CABLE-CORD, and the specially wrapped process of building up the Silvertown body.

A look into the unique construction of the Silvertown Tire will delight your appreciation of mechanical perfection.

You will see how cable-cord, a fusion of cord and rubber—40 per cent rubber—is made into a thong-like cable, flexible yet tough as whip leather.

You will see how the cable-cord is wrapped diagonally across the breadth of the tire.

The complete rubber saturation insulates a Silvertown against inside frictional heat, which often burns up tires on high-powered cars.

The spiral-wrapped body, sturdy and sinewy yet supple, absorbs the jolt and jar of rough roads much as a spring coil takes up the shock of a blow.

Try Silvertowns on your car. You will find it a smoother running car, easier to guide.

Then you discover your gasoline goes further; and finally your tires last longer.

Once you ride on Silvertowns, you will always ride on the tires with the Twin Red Diamonds on the sidewall.

Buy Goodrich Tires from a Dealer

GOODRICH
TIRES
"BEST IN THE LONG RUN"

gen, thus speeding his recovery. It can be used with perfect safety and comfort to the patient, no matter how badly he is injured, and its operation is an unfailing guide to his condition.

✣ ✣

Method of Sterilizing One of the Largest Swimming Pools in the World

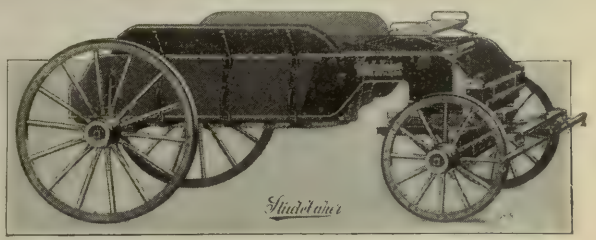
Krug Park, Omaha, Nebr., has installed a large, modern swimming pool and bathing beach for pleasure-seekers in the vicinity. The aim has been to take every precaution to provide cleanliness, healthfulness and convenience. The purification of the water in the pool will be by ozone, using apparatus manufactured by the Ozone Company of America, of Milwaukee, Wis.

The swimming pool itself has a water surface of more than an acre, and the beach, which entirely surrounds the pool, covers approximately another acre. Bath-house facilities are provided for the accommodation of 4,000 persons at one time, or as many as 15,000 to 20,000 persons during the day and evening.

Over one million gallons of water will be required to fill the pool. The water will be taken from the regular city supply, and after treatment will be kept in constant circulation thru the pool. A complete change of water will be made every 12 hours. All of the water before entering the pool will be screened, coagulated, filtered, and finally sterilized by ozone, thus destroying all bacterial life. Furthermore, the water will be constantly pumped and aerated over large cascades, thus adding an attractive feature to the pool as well as thoroly aerating all the water as it goes into the pool.

A Dump Wagon for Road Work

"A saver of horse flesh, time and money" is what the new 1,800-pound Studebaker "Road Builder" dump wagon is claimed to be. The model, as shown in the accompanying illustration, has a body constructed of oak thruout, full cut-under gear, wheels of slope-shoulder spoke construction (the length of wheel-base being 8 feet 6 inches, and width of track 56 inches, from center to center of tires on ground), either drop or stiff pole, with neck yoke or chains, and an elliptic spring seat, with hand holds on ends. The body is painted green, with red gear, neatly striped. The capacity of the body is 1½ cubic yards, heaped measure. The Studebaker Company, of South Bend, Ind., will be glad to send a catalog more fully describing this wagon to any city or county official in need of such a wagon for the hauling of earth and road materials.



A DUMP WAGON FOR MUNICIPAL AND COUNTY SERVICE

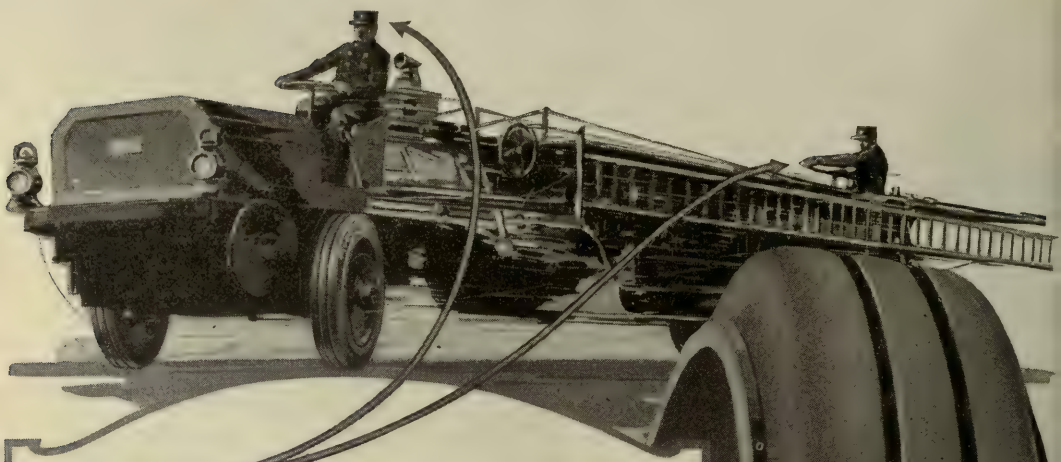
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Johnson and Benham, Partners

Lieut.-Col. George A. Johnson and Major Webster L. Benham have formed a partnership for a general consulting engineering practice, under the firm name of Johnson & Benham, offices at 150 Nassau Street, New York, and Firestone Building, Kansas City, Mo.



THE SWIMMING POOL AND BATHING BEACH IN KRUG PARK, OMAHA, NEBR.



These Are The Men Who Know

THE men at the wheels know how necessary it is to place confidence in the tires when turning corners at high speed under power.

The large bulk of rubber in one body means added resiliency and extra life for tires. The Firestone Grooves mean sure grip, sure traction. And these features combine to save gasoline.

Protect the apparatus and the men with this equipment and give your community the benefit of Most Miles per Dollar.

The Firestone line includes types and sizes for all styles of Fire Apparatus.

The nearest Firestone Branch Office has valuable suggestions on the right equipment for your needs.

FIRESTONE TIRE AND RUBBER CO.
FIRESTONE PARK AKRON, OHIO
BRANCHES AND DEALERS EVERYWHERE

"Firestone"

Firestone

Philadelphia's "Victory Way"

To help "put over" the Victory Loan, Philadelphia adopted a rather unique method of publicity, as shown by the accompanying photograph. The Trinidad Lake asphalt pavement at Broad and Chestnut streets was painted with the Victory emblem on a background of vermilion, a very striking design. It is interesting to note that altho the pavement is six years old and covers one of the heaviest traffic centers in the city, it shows no sign of wear and presented an even surface to the painter's brush. During the Victory Loan campaign, Broad Street was known as "The Victory Way," and Philadelphians may truly say that one of their Trinidad streets helped put the Loan over.



THE VICTORY WAY IN PHILADELPHIA

✣ ✣

Valves That Wear

One of the most important elements in water-supply service is the valves which control the flow of water into different parts of the system. The Eddy Valve Company, Waterford, N. Y., claims that its valves are designed with ample factors of safety in excess of the test pressure to which they are subjected, which is 300 pounds per square inch.



BRONZE-MOUNTED DOUBLE-GATE VALVE

The features of construction of the Eddy valve are that the gates are hung on the two trunnions of the ball, each trunnion fitting a corresponding cylindrical recess in the gate. At the base of each trunnion is a convex surface which fits a concave surface on the back of the gate. This allows the gates to properly adjust themselves to their seats (which are tapering), and the gates are free to revolve on the trunnions, so as not to seat always in the same position. This feature greatly adds to the life of the valve and prevents constant wear at one point. Interesting literature descriptive of the full line of Eddy valves and hydrants may be secured from the manufacturers.

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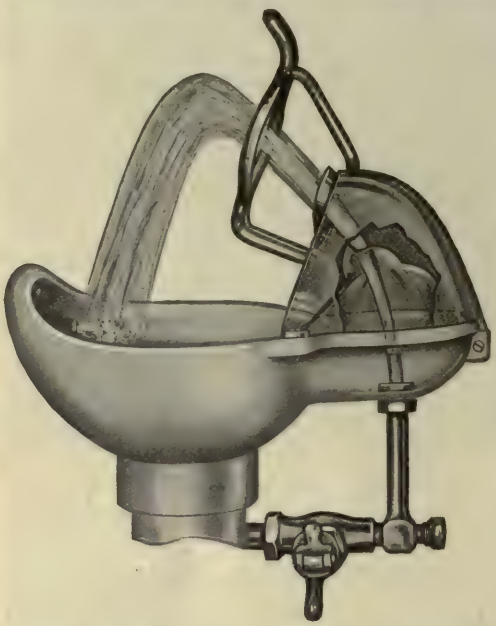
A New Electric Compressed-Air Fire Alarm

The Gamewell Fire Alarm Telegraph Company, of Newton Upper Falls, Mass., recently put upon the market a new fire alarm signal. This electric valve is connected directly into the main line fire alarm system, and responds to every make and break of the circuit.

Until this valve was developed all other electric valves required local battery for their operation. The valve is for use only in connection with compressed air, and is electro-pneumatic in construction, the magnet serving to release the air, which is used as a source of power to operate the main valve and restore the releasing mechanism to a normal position. The length of the blast is predetermined by an ingenious pressure column to which the compressed air is admitted when the valve is opened, and which causes the valve to close when the pressure in the column equals the supply pressure. A tripping device allows a

The PURO LIBERTY Fountain.

Protects the Public from Contaminated Drinking Water Because Discharge Tip Cannot be Touched.



The sloping stream, the mouth guard and general excellent construction of this new fountain, cause it to be one of the most satisfatory on the market today, from the standpoint of service and sanitation.

No city should maintain old style unsanitary bubblers, but should install the PURO LIBERTY FOUNTAIN in all public buildings and parks.

The Really Sanitary Drinking Fountain

Have you read the valuable and instructive article on the sanitary qualities of public drinking fountains in the May issue of THE AMERICAN CITY by Prof. J. H. Dunlap, entitled "Common Sense, Science and Drinking Fountains?" He states that "—science has proved that the most serious violation of common sense of which drinking fountains are guilty is that they are designed with vertical jets. As would be expected, experiments have shown that by slanting the jet at an angle of 15 degrees or more all the dangers inherent to the vertical type of jet are overcome. No water touched by the lips can fall so as to contaminate the source. [Nor should it be possible for the fingers to touch the tip or supply.]"

The PURO LIBERTY fulfils all the requirements of cleanliness, economy and beauty that are required by the most cautious and painstaking officials.

Literature will be sent to any interested official upon request.

Puro Sanitary Drinking Fountain Co.
Haydenville, Mass., U. S. A.

rapid succession of signals to be sounded when fast time is required. The construction is of the best material obtainable, and the valve is operated automatically. It does not contain any clockwork for moving electric contact points. When properly installed, with the required pressure maintained, this device should not need any further attention.

✣ ✣

Redwood Stave Pipe for Water-Supplies

The following illustration shows the construction of approximately 40,000 feet of 30-inch redwood stave pipe which is being installed near Portsmouth, Va. The line forms a link in the new water-supply for the cities of Portsmouth and Norfolk, Va. The work is being financed by the United States Government, and as soon as the pipe line is completed it will be turned over to the local water company for operation. After careful consideration of the various classes of pipe available, this type of pipe was selected by the authorities for this particular work on account of its long life, low friction losses and low cost. The pipe was fabricated by the Pacific Tank & Pipe Company, 310 Market Street, San Francisco, Cal., which will furnish illustrated printed matter on wood stave pipe for water-pipe and sewers.

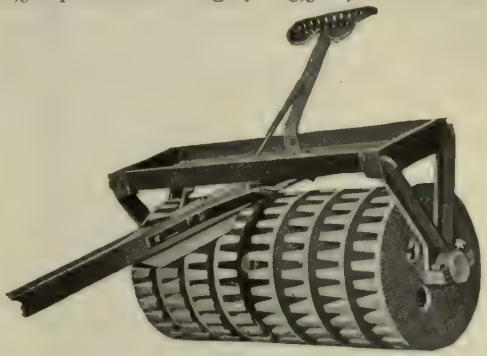


INSTALLING REDWOOD STAVE PIPE FOR A CITY WATER-SUPPLY SYSTEM

✣ ✣

A Roller that Builds Roads from the Bottom Up

A very interesting tamper roller, which operates on the principle of tamping rather than simply rolling, is manufactured by the Beach Manufacturing Company, Charlotte, Mich. It is built of a number of sections, each formed of lugs, which are so constructed that small stones will not wedge in between the teeth. It is claimed that one man and one team will do more and better work with this roller than three men and three teams can do with a smooth roller. The tamper roller weighs only 2,500 ponnds when light, or 3,500 pounds when fitted with weights. In this condition the pressure per square inch in contact with the road bed is the same as with a 10-ton smooth roller. The most interesting claim for this type of roller is that it actually builds the road up from the bottom. It packs the bottom first, and as the road bed becomes hard it works to the top, thus packing gravel from the bottom to the top, while a smooth roller only packs the top, leaving the bottom loose. It is claimed that it will pack the gravel without working it over the shoulders and without pushing it ahead. The service of this roller in breaking up sods when grading or building dirt roads is said to be remarkable.



A TAMPER ROLLER FOR ROAD WORK

✣ ✣

Water-Works Surveys

The Simplex Portable Pitot Tube Recorder, described in Bulletin 20-A published by the Simplex Valve & Meter Company, 112 North Broad Street, Philadelphia, Pa., is one of the most valuable instruments in use to-day in water departments for tracing water leaks. This bulletin describes the construction of the instrument and gives an account of surveys which have been made in a number of cities. It may be had upon request.

✣ ✣

J. W. Howard Resumes Private Practice

J. W. Howard, C. E., E. M., has finished serving in the Ordnance Department of the Army and has resumed the practice of his profession as consulting engineer on roads and pavements, with testing laboratory in Newark, N. J., and office at 1 Broadway, New York.

✣ ✣

Prominent Meter Concern Moves New York Office

Cards have recently been issued announcing the removal of the New York office of the Hersey Manufacturing Company, Inc., from 174 Fulton Street to 290 Broadway, Dun Building, where the company will be glad to welcome its customers.

CLOW
CHICAGO

CLOW

Bubbling Drinking



M4535 WALL TYPE

FOUNTAINS

are attractive, durable, sanitary and economical. The small amount they cost compared with others is more than offset by the additional years of service they give.

There is a Clow fountain for every location and a design adaptable for every structure.

Over 700 Clow Fountains are in use in Chicago's streets. They are used by Marshall-Field & Co., Sears Roebuck & Co., Western Electric Co., International Harvester Co., Cities of Cleveland, Detroit, Toledo, in schools from coast to coast, and hundreds of other places.

Clow Fountains are all

Built to Do Away with Trouble

and like all Clow Products are the very best that human skill can advise and construct. Large stocks of all Clow Fixtures insure quick deliveries. Write for catalog.

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CHICAGO, ILL.
Sales Offices
New York Milwaukee St. Louis
Philadelphia Minneapolis
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CHICAGO



BIG COMPANIES

—appreciate that dependable equipment makes for safe deliveries and regular schedules.

'NOBBY CORD' PNEUMATIC TRUCK TIRES mean more speed, larger delivery radius, low repair bills, and good all around satisfaction.

UNITED STATES RUBBER COMPANY
US
RUBBER SYSTEM
AND ASSOCIATED COMPANIES

Highway Engineer Resumes Private Practice

Announcement has been received that H. Eltinge Breed, formerly First Deputy Highway Commissioner of the state of New York, has resumed his private practice at 507 Fifth Avenue, New York City. Mr. Breed's engineering activities have included marine and municipal work, development and improvement, and general engineering, especially highway engineering. He is best known thru his extensive work on the New York State Highway Commission. Investigations, plans, reports, highway organization, the design and construction of roads and pavements, will be the lines along which Mr. Breed will specialize as consulting engineer in the future.

✣ ✣

Pumping Station and Distribution System

The Morris Fertilizer Company, of Bartow, Fla., in connection with hydraulic phosphate mining work, is constructing a 2,000-KW generator, a pumping station and a distribution system. The Scofield Engineering Company, of Philadelphia, Pa., are consulting engineers for this work.

✣ ✣

A Modern Surgical Dressing for Burns

The most modern humane dressing for cuts, burns, scalds, lacerations and bruises is Ambrine, which was officially adopted by the Allied fighting forces for treatment of cases during the war, and which is now available for public sale. The Ambrine treatment relieves pain instantly, heals the wounds from outside infection, and insures complete recovery in half the time required by former methods. Being of wax base, Ambrine does not adhere to the wound, and can therefore be removed and the wound redressed without disturbing the newly-forming tissues.

The Ambrine Emergency Case should be ready at every First Aid station. Fully 40 per cent of the industrial accidents are amenable to this treatment. Any one can apply it. Ambrine will last indefinitely without deterioration, and the benefit it gives to one injured worker more than justifies its purchase.

The American-LaFrance Fire Engine Company, of Elmira, N. Y., are agents for Ambrine as well as manufacturers of a great



THE AMBRINE EMERGENCY CASE FOR THE TREATMENT OF BURNS

number of safety devices and First Aid apparatus, which are described at length in their catalog of *LaFrance Safety Devices, Edition D.*

✣ ✣

Sanitary Dump-Wagon

One of the most essential features in the transportation of garbage, ashes, street sweepings, night soil and semi-liquid or fine materials, is that the waste should not leak out on the street. George H. Holzbog & Bro., Jeffersonville, Ind., manufacture the leakproof dump-wagons illustrated below.



ONE OF THE DUMP-WAGONS USED BY THE TOPEKA PARK DEPARTMENT



Bi-Lateral Fire Hose construction keeps the rubber from cracking or leaking. If you want the best fire hose at the lowest cost per year of service, send for our catalogue.

Bi-Lateral Fire Hose Co.
326 W. Madison Street Chicago, Ill.

We specialize in Equipment for Motor Fire Apparatus

Complete Stock of General Fire Department Supplies

Sole Manufacturers of
Anderson-Hale Fire Station Door Openers

Estimates Cheerfully Given

THE ANDERSON COUPLING AND FIRE SUPPLY COMPANY
Kansas City Kansas

Dayton Airless Tires

GUARANTEED
2½ YEARS

Made exclusively for Fire Department use.

Ride like Pneumatics
No Punctures
No Blowouts

Write for information

The Dayton Rubber Mfg. Co.
Dayton, Ohio

FABRIC FIRE HOSE

is of an unusually careful manufacture
WAX and PARA GUM TREATED

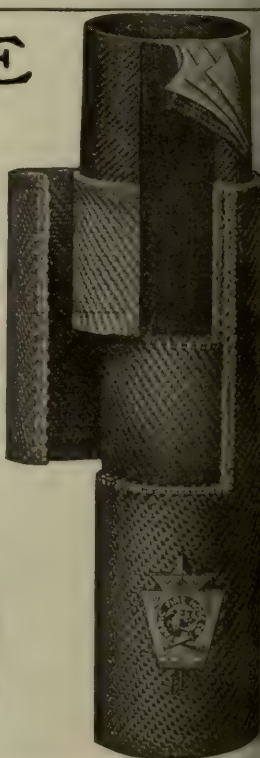
The lining is of fine Para Gum, hand made, four calendered, smooth bore or lap-jointed

Circular balance woven, each strand of cotton is treated to a bath of melted Wax and Para Gum, then cabled and woven into the jackets.

Absolutely waterproof, making the ideal hose for fire departments.

Treatment lubricates and solidifies the strands of cotton, assuring long wear.

Made in all sizes from 1 to 6 inches inside diameter.



FABRIC FIRE HOSE CO.
COR. DUANE & CHURCH STS., NEW YORK

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SAN FRANCISCO
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PROVIDENCE
DALLAS, TEX.

Patentee and Sole Manufacturer

SERVICE IS THE THING

Wherever you go you find American-LaFrance motor fire apparatus performing the day-after-day service that proves its quality.

Atlantic City, N. J., one of the great recreation spots of the Atlantic coast, protects its millions of dollars worth of property and thousands of lives with American-LaFrance Motor Fire Apparatus.

Atlantic City already has fifteen pieces of American-LaFrance motor fire apparatus which have been in service varying periods of from one to six years. This service has been so satisfactory that additional American-LaFrance apparatus is now on order.

A Glimpse of Atlantic City, N. J., showing the Boardwalk and one of the Famous Hotels.



COPYRIGHT UNDERWOOD & UNDERWOOD

Nothing talks like actual performance



Part of the American-LaFrance Motor Apparatus in Atlantic City, N. J.

AMERICAN-LAFRANCE FIRE ENGINE COMPANY, INC.

ELMIRA, N. Y., U. S. A.







ARE YOUR ... HOUSES ... PROPERLY NUMBERED?

Are your street signs handsome in appearance and plainly readable? You will be interested in our line of stamped metal plates for municipal and county use including street and road signs, house numbers, official badges, license plates, dog tags, etc. We have 25 years' experience and offer you the best of service at the right prices. Special signs or plates made to order. Illustrated List 10, AC1 sent on request.

Niagara Falls Metal Stamping Works

Makers of Hardware Specialties

Niagara Falls, N. Y.



Correct Sh for School

TWO things to consider—the quality of the shade, and how it should be placed.

Oswego Tinted Cambric or Triplex Opaque on the celebrated Hartshorn Rollers form an ideal combination—a combination in use in thousands of schools where Superintendents and Teachers have had proper regard for ventilation and care of the children's eyes.

STEWART HARTSHORN CO.

Oswego Shade Cloth Co.

Write for samples of Colors 214 and 204 in Tinted Cambric, which have been analyzed by chemists and adopted by School Boards of some of the larger municipalities.

General Office, 250 Fifth Ave., New York City
Chicago Office, 332 So. Michigan Ave., Chicago

HAVE A DRINK
ON THE CITY

This should be the invitation from every municipality to its inhabitants. Now is the time to prepare the oasis before the desert of dryness surrounds us all. We specialize in fountains—a kind for every purpose.



Catalog upon request.

RUNDLE-SPENCE MFG. CO.

Milwaukee, Wis., U. S. A.



Traffic Regulations

are easily enforced when backed up with plenty of signs. "Ensco" signs are largely used for this purpose by progressive municipalities, because they combine attractiveness, permanence and general utility. "Ensco" signs are guaranteed not to fade, scale or tarnish—and can be had in any quantity for street signs, road signs, house number plates, and the like.

Send Specifications for Prices.
No Obligation Incurred.

Enameled Iron Sign Company

Neptune Bldg., Madison Sq. No., New York

AGAIN AVAILABLE

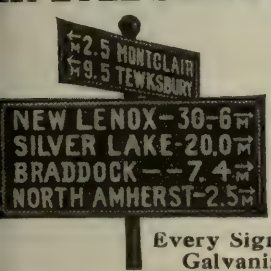
ENAMELED SIGNS—of permanent porcelain—standard service signs for municipal purposes will soon again be available. "Uncle Sam" who commandeered our factory properties for the war period, is just about to release them and immediately, we will resume normal commercial production.

Capacity, moderness and efficiency largely influenced our Government when factory facilities of this type were in demand for the intensive prosecution of the war. "Uncle Sam" wanted a big plant, where big things could be done in a big way.

Within the next 60 days these virtues which so strongly appealed to our Government, will be at your disposal so that you can again base your specifications for municipal porcelain enameled iron signs on this standard rust-proof and color-proof porcelain product—"BALTO" Guaranteed Porcelain Enameled Iron Signs.

THE BALTIMORE ENAMEL & NOVELTY CO.
BALTIMORE, MD.

LET LYLE SIGNS POINT THE WAY



Carved-In Letters Are Smooth in Outline, Yet Clearly and Sharply Defined.

They Enable You to Read the entire Message at a Glance.

Every Sign Made of ⅛-inch Galvanized Armco Iron Plates.

LYLE CORRUGATED CULVERT CO.
Dept. B MINNEAPOLIS, MINN.



STREET MARKERS

SIMPLE AND DURABLE
EASILY READ
ATTRACTIVE

For business or residential districts we can furnish the best quality markers.

UNION IRON PRODUCTS CO.
Drawer H. EAST CHICAGO, IND.

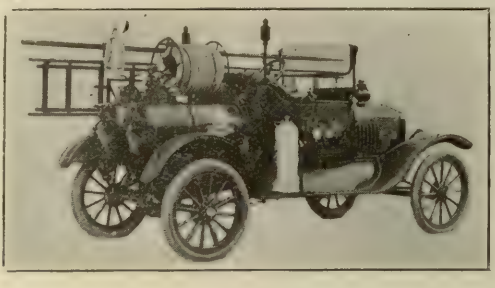
SIGNS OF QUALITY *and* PERMANENCE



YOU are called upon to improve your highways, streets and pavements. These will not be complete until the question of placing proper signs on them has been decided; and when considering highway and street signs it is for your interest to give first thought to attractiveness and permanency—in other words, don't do that which you will be required to do over again in a few years. All we ask of you is to request our catalog, showing combination street sign and lighting standards, traffic signs with electric light or without, highway and junction guideboards, school, danger and railroad-crossing warning signs that are always efficient and a decided credit to any community.

WRITE FOR CATALOG

THE LEBANON MACHINE CO.
Highway Directory Engineers
LEBANON NEW HAMPSHIRE



The "Deluge" car shown above is built of best material and workmanship. Simple, strong, reliable.

DELUGE Ford CHEMICAL AND HOSE CAR

For small town fire departments, and the sparsely settled sections of larger cities—"Deluge" Equipment is the best. You get maximum service and best results. Send for prices and specifications

THE PROSPECT MFG. CO.
P. O. BOX 515 PROSPECT, OHIO



MAKE IT EASY FOR THE PUBLIC

Prevent fire and disease use the Safety first.

Catalogue sent on request.

SAFETY SANITARY RUBBISH BOX CO.
COLUMBUS, O.

WASTE AND REFUSE CANS OF APPROVED DESIGNS



Whenever you are in need of street trash cans, waste receptacles for parks, schools or other public buildings, or garbage cans for street collection work, our descriptive catalog may show you just the can you desire. Let us have your address so that we can send you illustration of various types of refuse holders.

THE STEEL BASKET COMPANY
708 So. Third St. Cedar Rapids, Iowa

Do YOU Know an EVERCLEAN GRAVEL SCREEN

Will Screen Wet Gravel

Write **BEACH MFG. CO.**
No. 21 Bridge St., Charlotte, Mich

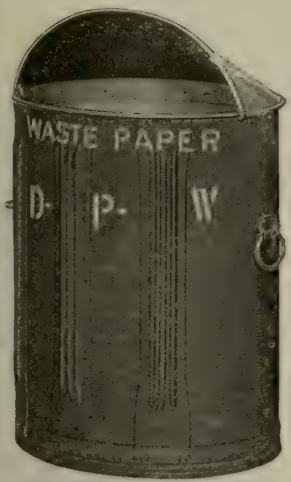
The House of Sunshine

Hotel Hamilton

73d St., bet. Col. Ave. & B'dway
New York City

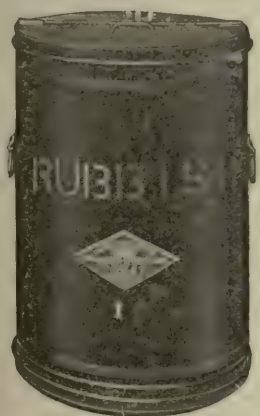
An ideal family hotel situated in a refined section, catering to a select clientele. All the comforts of a private home without housekeeping cares.

A Short Distance from the Leading Shops, Theatres, etc.



Oval Rubbish Can


Flaring Garbage Can


Spring Top Rubbish Can

CANS

For Your

City Streets
Parks and Playgrounds

For Your

Garbage Collection Systems

For Your

Street Cleaning Department

"IRON HORSE"

BRAND

Quality
Strength
Durability

Send for
Complete Catalogue

Mfg by

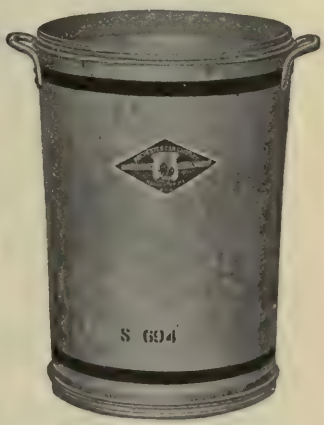
ROCHESTER CAN CO.

103 Hague St.

ROCHESTER N. Y.



Reinforced Garbage Can



Street Cleaning Can



Round Rubbish Can



Economy Insures Progress

The Bell System has accumulated a reserve of $340,000,000 to provide the necessary safeguard to the business and to meet those emergencies caused by storm, fire and kindred uncontrollable disasters.

This reserve has been invested in the construction of telephone property for the benefit of telephone users. Neither interest nor dividends are paid on this money. This fund works in extending and improving telephone service without cost to the public.

Like a landlord whose careful management has given added comforts and conveniences to tenants without raising the rent, the great efficiency savings of the Bell System have been used to build a better and broader service. Rate increases are, of course, necessary but because of this economy the Bell System is not compelled to make such rate increases as have been made by other utilities and in other lines of business.

Linking the crude telephone of forty years ago to the Bell System of today is a series of great accomplishments, both in the art and economy of telephone operation.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

THE FUN-FUL LINE
PLAYGROUND EQUIPMENT

WE ARE READY NOW TO GO AHEAD WITH THAT PLAYGROUND DEVELOPMENT POSTPONED ON ACCOUNT OF THE WAR. ARE YOU?

We have "Everything for the Playground"

INCLUDING SLIDES, SWINGS, OCEAN WAVES, SEE-SAWS, GIANT STRIDES, OUTDOOR GYMNASIUM COMBINATIONS, ETC. ALSO A COMPLETE LINE OF ATHLETIC GOODS AT WHOLESALE PRICES. LET US FURNISH PLANS, SPECIFICATIONS AND ESTIMATES FOR YOUR ENTIRE DEVELOPMENT.

We are Recreation Engineers

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MILL-STANDARD COMPANY
FUN-FUL AVENUE ANDERSON, INDIANA

UNION METAL LAMP STANDARDS

Prevent "Lamp Post" Accidents



Such accidents as the ones here pictured and described are impossible where Union Metal Lamp Standards are used. The post, shaft and head are separate units held together by three steel tie rods and all anchored firmly to the sub-base. This construction coupled with the pressed metal shafts, will resist the most severe shocks and blows which would instantly wreck any other type of standard.

Every cast iron lamp post constitutes a liability for accident, and one damage case might easily cost the city or other owner more than the entire lighting system. Union Metal Standards with the unbreakable pressed metal shaft are the only safe standards for city lighting.

Put Safety First in Your Lighting System

Write for Our Booklet

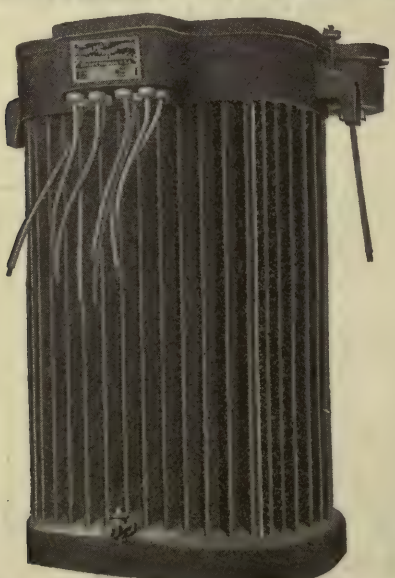
"Ornamental Street Lighting"

The Union Metal Mfg. Co.

Largest and Oldest Manufacturers of Ornamental Lighting Standards

CANTON, OHIO

DISTRIBUTION TRANSFORMERS



FOR LIGHT AND POWER SERVICE EFFICIENT LOW FIRST COST AND MINIMUM UPKEEP

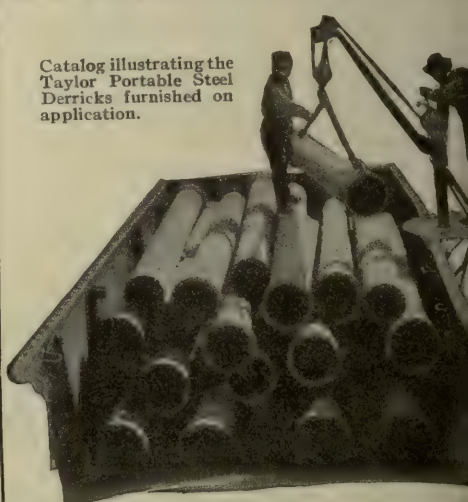
KUHLMAN ELECTRIC CO.

BAY CITY, MICH.

The TAYLOR

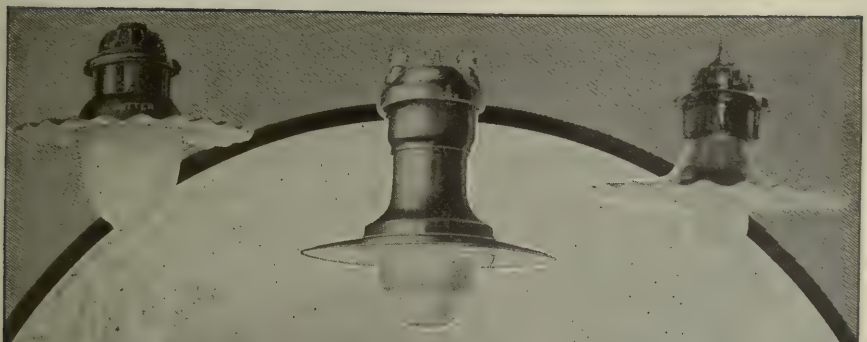
PORTABLE STEEL DERRICK with Gondo Car Attachment for HANDLING PIPE other heavy material from gondola ca

Catalog illustrating the Taylor Portable Steel Derricks furnished on application.



TAYLOR PORTABLE STEEL DERRICK

213 W. Grand Ave., Chicago, Ill.

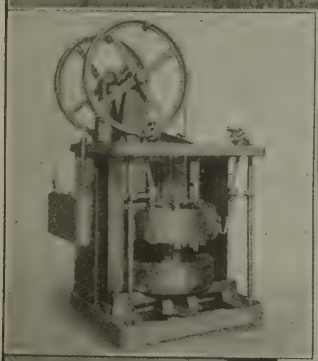


The safety and convenience of modern street lighting can be had by every town.

Westinghouse Street Lighting Systems

offer the choice of a number of street lighting methods, each of which is highly developed to the point of securing the best possible lighting at the lowest installation and maintenance expense.

Westinghouse Luxsolite Lighting Fixtures are the highest development in street lighting. The skirted refractor eliminates the undesirable glare and produces a better light that makes wider spacing possible. Luxsolite lamps are as efficient in watts per candle power as arc lamps. But they have an advantage over arc lamps in that they have no complicated mechanism to get out of adjustment or to require replacement.



The constant-current regulator too, is a distinct advancement. It closely regulates the current consumption and makes it possible to have on the same circuit any different candle power series of lamps that varying conditions may require.

Westinghouse Electric & Mfg. Co.
East Pittsburgh, Pa.

W
WESTINGHOUSE ELECTRIC

Westinghouse

HOWARD GEORGE
APEX
PLAYGROUND OUTFITTER

"APEX" APPARATUS

SAFETY **SIMPLICITY**
STRENGTH **SATISFACTION**

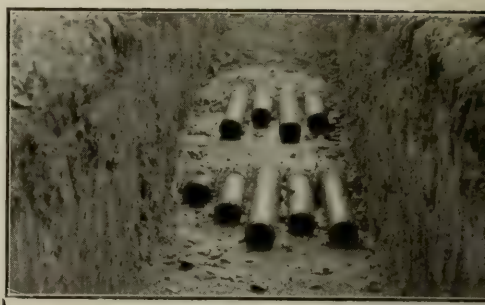
Flying Ring Frames, Traveling Ring Frames, Combination Playground Frames, Swings, Giant Strides, Horizontal Bars, Horizontal Ladders, See-Saws, Sliding Boards, Basket Ball Outfits.

Write for illustrated catalogs to-day

HOWARD GEORGE
PHILADELPHIA

APEX—the apparatus that will never work loose

HOWARD GEORGE
APEX
PLAYGROUND OUTFITTER



STANDARDIZED Conduit—

only Orangeburg Fibre deserves that name.

Standardized throughout—every length and joint the same. We make three tests to be sure that they fit be ore we call this conduit ORANGEBURG.
Because o these tests Orangeburg Fibre Conduit is easily installed, less labor, particularly skilled labor, being required. It is light, easily handled and ac curate.
Cables are never damaged while being pulled in be cause the interior walls are smooth and true—not only in a single length but throughout the run.
Be ore installing conduit, get the facts. Book "W" tells the story of Orangeburg Fibre—the Standard ized Conduit.

THE FIBRE CONDUIT COMPANY
ORANGEBURG, N. Y.
New York Boston Chicago San Francisco



THIS PAINT IS CHEAPEST IN THE END

A paint, like Dixon's Silica-Graphite Paint, gives better protection for a longer period of time than ordinary paint. That's one reason.

DIXON'S SILICA GRAPHITE PAINT

The longer the paint lasts the less often you have to employ painters. This, perhaps, is the greatest advantage you derive from using a high grade paint. For the biggest item of expense in any painting job is the labor.

So there is a double economy resulting from the use of Dixon's Silica-Graphite Paint; Thorough-going protection for all metal work, smokestacks included, and an enormous saving in the labor-cost for painting. This paint has some remarkable records of long service to its credit. It is being used exclusively in all parts of the world and in all industries.

Write for Booklet No. 107-B and see how much better satisfied you will be by using Dixon's Silica-Graphite Paint.

Made in JERSEY CITY, N. J., by the
JOSEPH DIXON CRUCIBLE CO.
Established 1827

THE GAMEWELL FIRE ALAR TELEGRAPH CO.



"Registered U. S. Patent Office"

Manufacturers of
Fire Alarm and Police Signal
TELEGRAPHS
for
Municipalities and Private Parties

The Gamewell system of to-day i the outcome of the combined inventiv genius and mechanical skill of man whose valuable services the compan has been able to secure during th past fifty-seven years, in pursuance o its policy of meeting at any cost th requirements of the varied condition existing in different localities.

Correspondence Solicited.

General Office and Works:
Newton Upper Falls, Mas

SPRACO

he Saving on One Job Alone Pays for Spraco Painting Equipment

isn't as though the buying of SPRACO PNEUMATIC INTING EQUIPMENT meant a large outlay of money. from it. SPRACO PAINTING EQUIPMENT is in- ensive and so economically and so effectively does its k for you that on the first job you can realize a saving al to its cost.

l it continues to save you the labor of half a dozen men, e and material for years.

hand and brush method is old-fashioned. To paint n SPRACO EQUIPMENT is to paint the modern way.

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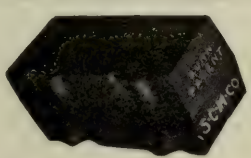
RAY ENGINEERING CO. Boston, Mass.



OUTHERN CLAY MFG. CO.

James Building

HATTANOOGA, TENN.



Annual Capacity: Thirty Million Paving Blocks

Manufacturers of

WIRE-CUT-LUG BLOCKS

DUNN PATENT

Repair Your Streets with HE LUTZ SURFACE HEATER

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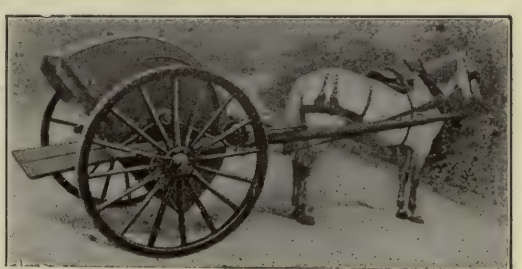
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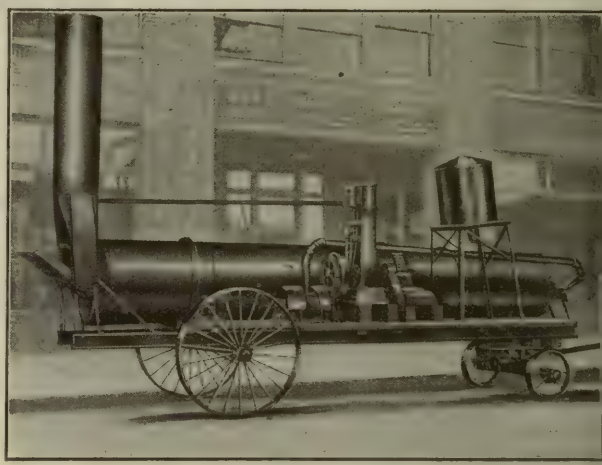
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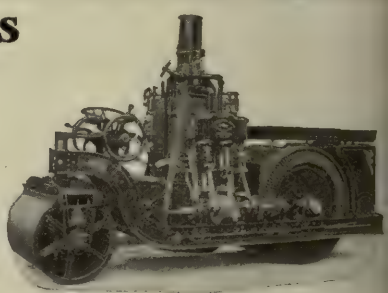
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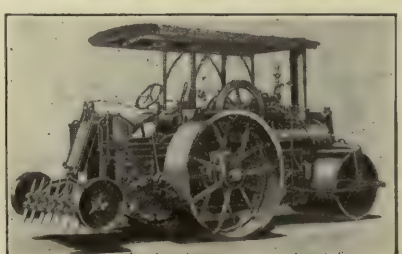
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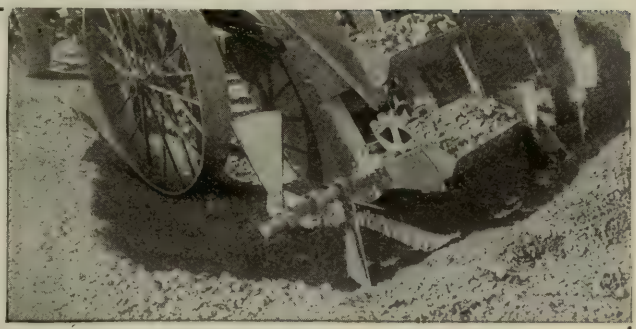
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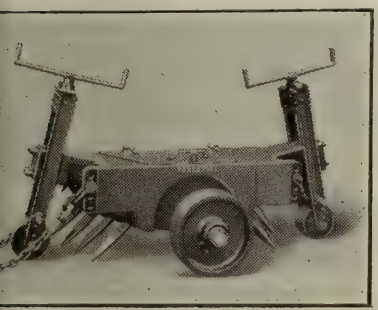
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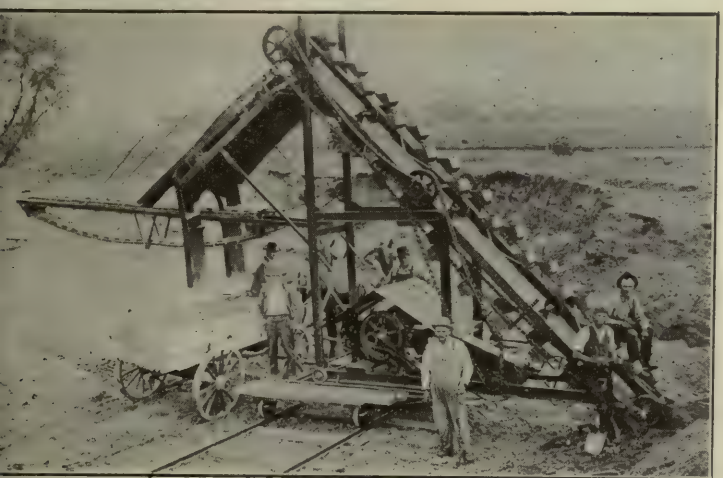
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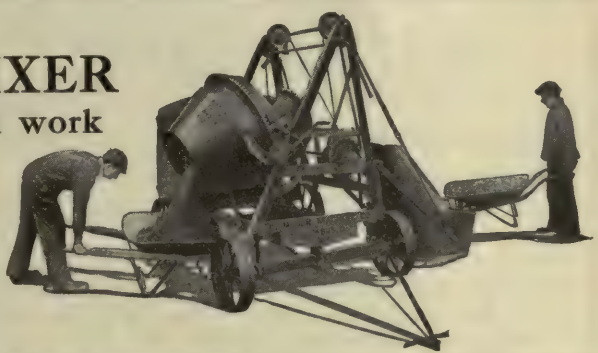
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The most effective means yet developed for presenting comprehensively and with no waste of time:

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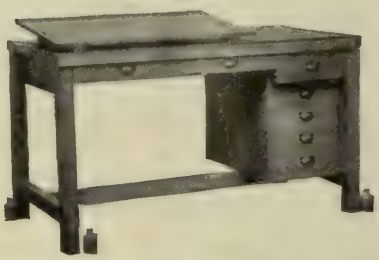
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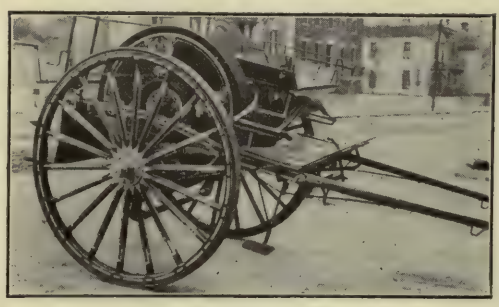


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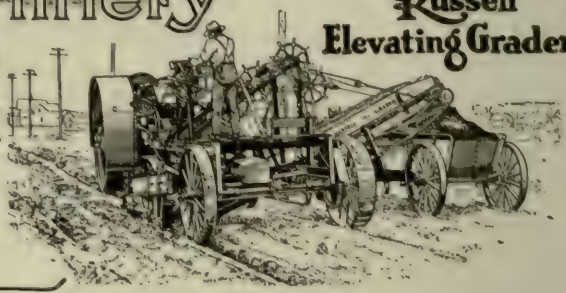
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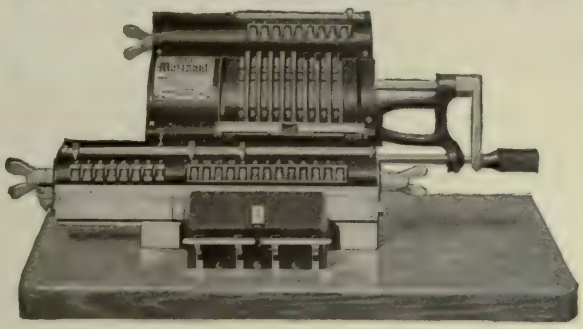
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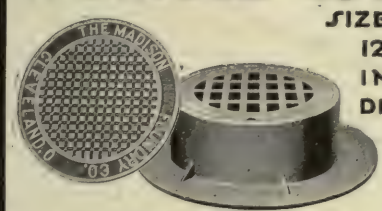
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Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this classified list. See page 136

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Bond & Co., Harold L.

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Continued on page 128



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Dreer, Henry A.

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Fabric Fire Hose Co.
Goodrich Rubber Co., B. F.

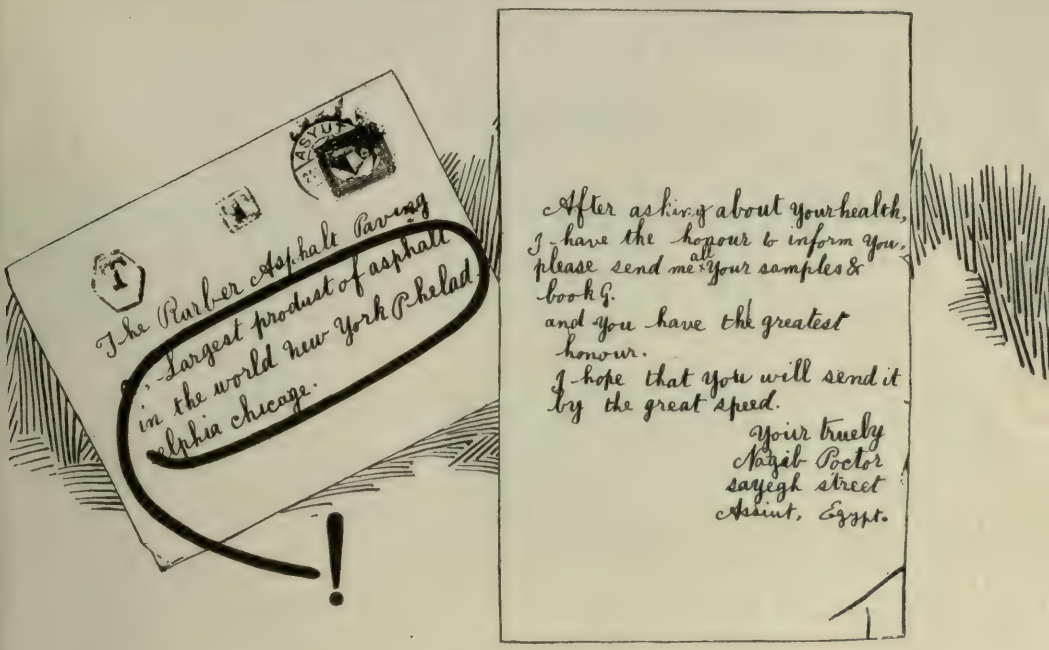
Hot Mixers.
Barber Asphalt Paving Co.

House Numbers.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Niagara Falls Metal Stamping Co.

Hydrants.
Clow & Sons, James B.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Norwood Engineering Co.
Rensselaer Valve Co
Smith Mfg. Co., A. P.
Wood & Co., R. D.

Indicator Posts.
Clow & Sons, James B.
Columbian Iron Works.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Pratt & Cady, Inc.
Rensselaer Valve Co.

Continued on page 130



Century Old Egypt

was probably the first user of Natural Asphalt. She realized, in her wisdom, the lasting and binding power of

TRINIDAD LAKE ASPHALT

It is the paving material older than Egypt herself.

Unchanging in quality since the early days of Egypt and Babylon, Trinidad is used today by discerning engineers to pave the streets of the world.

TRINIDAD holds the world's record for long life and low maintenance. If there is a better paving material it will take 40 years to prove it.

Write for "It is Different."

The Barber Asphalt Paving Company

PHILADELPHIA, PA.

Every name in this list is repreesnted by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this calssified list. See page 136

Insulating Materials.
Barrett Co., The.
Bissell Co., F.
Carey Co., Philip.
General Electric Co.
Westinghouse Electric & Mfg. Co

Insulated Wire and Cable.
General Electric Co.
Hazard Manufacturing Co
Simplex Wire & Cable Co.

Jail Cells and Jail Work.
Flour City Ornamental Iron Co.
Stewart Iron Works Co.

Joints, Flexible.
Coldwell-Wilcox Co.

Kettles, Tar and Asphalt.
Connery & Co., Inc.

Landscape Architects.
American Park Builders
Arnold, Sheffield A.
Arnold & Tripp.
Cole, Louis S.
Cullen, Wm. E.
Davey Tree Expert Co.
Higgins, I. Wallace.
Koch & Fowler.
Pitkin, Jr. William

Lapidolith.
Sonneborn Sons, Inc., L.

Lawn Mowers.
Austin Western Road Machy. Co.
Pennsylvania Lawn Mower Works.
Shawnee Mower Co.

Lawn Sweepers.
Everwear Mfg. Co.
Pennsylvania Lawn Mower Co.

Lead Furnaces & Caulking Tools.
Smith Mfg. Co., A. P.

Leadite.
Leadite Co.

Lead Wool.
United Lead Co.

Leak Finders.
Clark & Co., H. W.
Pitometer Co.

License Plates and Tags
Niagara Falls Metal Stamping Co.

Lighting Standards.
Clow & Sons, James B.
Cutter Co., George.
Electric Railway Equipment Co.
Stewart Iron Works Co.
Union Metal Mfg. Co.

Liquid Chlorine.
Arnold, Hoffman & Co.
Bush-Beach & Gent.
Electro Bleaching Gas Co.
Great Western Electro Chem. Co.
Hooker Electrochemical Co.
Pennsylvania Salt Mfg. Co.
Wallace & Tiernan Co., Inc.

Lubricants.
Dixon Crucible Co., Joseph.

Manhole Covers.
Clark Co., H. W.
Clow & Sons, James B.
Columbian Iron Works.
Flour City Ornamental Iron Co.
Madison Foundry Co.
U. S. Cast Iron Pipe & Foundry Co
Wood & Co., R. D.

Memorials for Soldiers, Etc.
Lebanon Machine Co.

Merry-Go-Rounds.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg., Co. Fred.

Metal Preservatives.
Dixon Crucible Co., Joseph.

Meter Books.
Buffalo Meter Co.
Mueller Mfg. Co., H.
Pittsburgh Meter Co.

Meter Boxes.
Buffalo Meter Co.
Clark Co., H. W.
Clow & Sons, James B.
Columbian Iron Works.
Ford Meter Box Co.
Fouts Co., C. C.
Hersey Mfg. Co.
McNutt Meter Box Co.
Pittsburgh Meter Co.

Meter Couplings.
Clark Co., H. W.
Ford Meter Box Co.
McNutt Meter Box Co.
Mueller Mfg. Co., H.
Pittsburgh Meter Co.

Meter Holding Devices.
Ford Meter Box Co.
McNutt Meter Box Co.

Meter Testers.
Buffalo Meter Co.
Clark Co., H. W.
Ford Meter Box Co.
Mueller Mfg. Co., H.
Neptune Meter Co.
Pittsburgh Meter Co.

Meters—See Water and Gas Meters.

Meters for Oil and Gasoline.
Bowser & Co., S. F.
Pittsburgh Meter Co.

Motor Trucks.
Autocar Co., The
Denby Motor Truck Co.
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Indiana Truck Corp.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Motor Fire Apparatus—See Automobile Fire Apparatus.

Motor Truck Trailers.
Denby Motor Truck Co.
Watson Wagon Co.

Natural Asphalt.
Barber Asphalt Paving Co.

Nurseries.
Andorra Nurseries.
Bobbink & Atkins.
Donaldson Co.
Dreer, Henry A.
Elm City Nursery Co.
Kohankie & Son, Henry.
Meehan Co., Thomas.
Riverview Nursery & Seed Co.
Smith Co., W. & T.
Spring Hill Nursery Co.
Storrs & Harrison Co.

Oil Engines.
Fairbanks, Morse & Co.

Oil Tanks.
Bowser & Co., S. F.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Fouts Co., C. C.
Pacific Tank & Pipe Co.

Packing.
Carey Co., Philip.

Paint, Preservative.
Barrett Co. The.
Dixon Crucible Co., Joseph.
Sonneborn Sons, Inc.

Paint Gun (Pneumatic).
Spray Engineering Co.

Park Benches.
American Playground Device Co.
Enterprise Iron Works.
Stewart Iron Works Co.

Park and Lawn Sprinklers.
Spray Engineering Co.

Paving Inspection.
Allentown Testing Laboratories.

Paving Machinery and Tools.
Barber Asphalt Paving Co.
Beach Mfg. Co.
Erie Machine Shops
Equitable Asphalt Maintenance Co.
Warren Bros. Co.

Paving Materials. (See also under Brick and Cement.)
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Bitoslag Paving Co.
Carey Co., Philip
Robertson Co., H. H.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.
Warren Bros. Co.

Paving Mixers.
Barber Asphalt Paving Co.
Warren Bros. Co.
Waterloo Construction Machy. Co.
Worthington Pump and Machinery Corporation.

Paving Mixtures.
Barber Asphalt Paving Co.
Standard Oil Co. of Indiana,
Standard Oil Co. of N. J.

Pencils, Drafting, Office.
Dixon Crucible Co., Joseph.

Pipe.
American Cast Iron Pipe Co.
Cast Iron Pipe Pub. Bureau, R. C. McWane, Sec.
Central Foundry Co.
Clow & Sons, James B.
Donaldson Iron Co.
Glamorgan Pipe & Foundry Co.
Lynchburg Foundry Co.
Massillon Iron & Steel Co.
Pacific Tank & Pipe Co.
U. S. Cast Iron Pipe & Foundry Co.
Warren Fdry. & Machine Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A.

Pipe Covering.
Carey & Co., Philip.
Pacific Tank & Pipe Co.

Pipe Cutters.
Smith Mfg. Co., A. P.
Strickler & Bros. W W

Pipe Handling Machinery.
Taylor Portable Steel Derrick Co.

Pipe Joint Compound.
Dixon Crucible Co., Joseph.
Pacific Flush Tank Co.

Pipe Jointing Materials.
Leadite Co.
United Lead Co.

Pipe Locators.
Clark Co., H. W.

Pipe (Riveted Steel.)
Pittsburgh-Des Moines Steel Co.

Pipe Tools.
Walworth Mfg. Co.

Pitch.
Barrett Co., The.
Carey Co., Philip.

Pitometers.
Pitometer Co., The.

Pito Tubes.
Simplex Valve & Meter Co.

Playground Apparatus.
American La France Fire Engine Co.
American Playground Device Co.
Everwear Mfg. Co.
George, Howard.
Hill-Standard Co.
Medart Mfg. Co. Fred

Plows.
Austin Western Road Mach'y Co.
Beach Mfg. Co.
Burch Plow Works Co.
Good Roads Machinery Co.

Plumbing Supplies.
Clow & Sons, James B.
Mueller Mfg. Co., H.
Rundle Spence Mfg. Co.

Poles, Combination Railway and Lighting.
Cutter Co., George.
Electric Railway Equipment Co.
Union Metal Mfg. Co.

Police Patrols.
Denby Motor Truck Co.
The Autocar Co.
General Motors Truck Co.
White Co., The.

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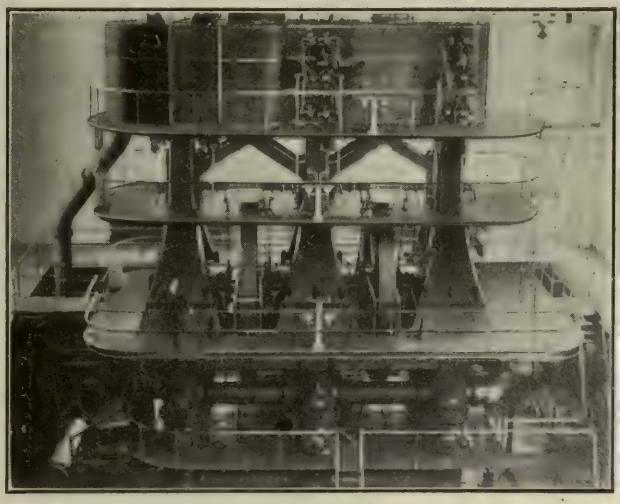
Attention Water Works Men!

A

BOWSER

ESTABLISHED 1885

Oil Filtering and Oil Circulating System in Your Plant Will Save Money



With the present high price of lubricating oil, every drop must be made to do full duty.

To make this possible, it is necessary to install an efficient oil filtering and circulating system.

With the Bowser System, the lubricant is fed to bearings in a continuous stream. This insures efficient lubrication at all times. The oil is drained back to the filter where it is thoroughly cleaned and used again, the process being repeated continuously.

BOWSER

ESTABLISHED 1885

SYSTEMS PAY

The Mission Street Pumping Station of the Pittsburg, Pa., Water Works shown in the illustration above is one of many pumping stations equipped with Bowser Oil Filtering and Circulating Systems. Write us for literature explaining the Bowser principle of Oil Filtration.

S. F. Bowser and Company, Inc.

FORT WAYNE, INDIANA, U. S. A.

Branch Offices in 21 Cities of the United States

LONDON
32 Victoria St. S. W. 1

HAVANA
Lonja del Comercio 427

Canadian Office and Factory
TORONTO, ONT.

PARIS
5 Rue Denis-Poissons

SYDNEY
6 Castlereagh St.

Every name in this list is represented by an advertisement in this issue of THE AMERICAN CITY. The alphaZetical index to all advertisements follows this calssified list. See page 136

Police Signal Cables.
Hazard Manufacturing Co.
Simplex Wire & Cable Co.

Police Signal Systems.
Gamewell Fire Alarm Telegraph Co.

Portable Steel Derricks.
Taylor Portable Steel Derrick Co.

Portland Cement.
Pennsylvania Cement Co.

Producers, Gas Power Plant.
Westinghouse Electric & Mfg. Co.

Public Accountant.
Demartini, J. W.

Publishers.
Engineering News-Record.

Pumping Machinery.
Allis Chalmers Mfg. Co.
Bond Co., Harold L.
De Laval Steam Turbine Co.
Deming Co.
Fairbanks, Morse & Co.
Wood & Co., R. D.
Worthington Pump and Mach. Corp.
Yeomans Bros. Co.

Pumps for Oil and Gasolene.
Bowser & Co., S. F.

Ramshorn Meter Holding Frame.
Ford Meter Box Co.

Reinforcing for Paving.
Truscon Steel Co.

Repair Lids for Service Boxes.
Clark Co., H. W.
Mueller Mfg. Co., H.

Road and Street Machinery.
Advance-Rumley Thresher Co.
Austin-Western Road Machy. Co.
Baker Mfg. Co.
Barber Asphalt Paving Co.
Beach Mfg. Co.
Buffalo-Springfield Roller Co.
Connery & Co., Inc.
Denby Motor Truck Co.
Dyar Supply Co.
Erie Machine Shops.
Four Wheel Drive Auto Co.
Good Roads Machinery Co.
Haiss Wagon Loader Co.
Jordan & Steel Mfg. Co.
Littleford Bros.
Lyle Corrugated Culvert Co.
Pawling & Harnischfeger Co.
Russell Grader Mfg. Co.
Union Iron Products Co.
Universal Road Machinery Co.
Warren Bros. Co.
White Co., The
Zieg Mfg. Co., F. B.

Road Binders.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Barrett Co., The.
Semet-Solvay Co.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Co.

Road Culverts.
Burch Plow Works Co.
Clow & Sons, James B.
Fouts Co., C. C.
Good Roads Machy. Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Union Iron Products Co.
U. S. Cast Iron Pipe & Fdry. Co.
Wood & Co., R. D.
Zieg Mfg. Co., F. B.

Road Drag and Street Scrapers.
Austin-Western Road Machy. Co.
The Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Newport Culvert Co.
Rochester Can Co.
Russell Grader Mfg. Co.
Union Iron Products Co.
Zieg Mfg. Co., F. B.

Road Fabric.
Robertson Co., H. H.

Road Oil.
Atlantic Refining Co.
Barber Asphalt Paving Co.
Standard Oil Co. of Indiana.
Standard Oil Co. of N. J.
Texas Company

Road Oilers.
The Autocar Co.
Austin-Western Road Machy. Co.
Denby Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Good Roads Machinery Co.
Service Motor Truck Co.
Studebaker.
Universal Road Machinery Co.
White Co., The.

Road Rollers.
Austin-Western Road Machy. Co.
Barber Asphalt Paving Co.
Buffalo Springfield Roller Co.
Erie Machine Shops.
Good Roads Machinery Co.

Rock Crushers.
Austin-Western Road Machy. Co.
Good Roads Machinery Co.
Universal Road Machinery Co.
Worthington Pump & Mach. Corp.

Roofing Materials.
Barber Asphalt Paving Co.
Barrett Co., The.
Carey Co., Philip.

Rubber Tires.—See Tires, Rubber.

Rust Preventing Material.
Barrett Co., The.
Dixon Crucible Co., Jos.

Sand Spreaders.
Buffalo Municipal Equipment Co.

Sand Testing Machines.
Kolesch & Co.

Sanitary Drinking Fountains.
Clow & Sons, James B.
Mueller Mfg. Co., H.
Puro Sanitary Drinking Fountain Co.
Rundle-Spence Mfg. Co.
Stewart Iron Works Co.

Scales.
Fairbanks, Morse & Co.

Scarifiers.
Austin-Western Road Machy. Co.
Buffalo Springfield Roller Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.
Universal Road Machinery Co.

Seeds, Plants and Bulbs.
Burpee Co., W. Atlee.
Dreer, Henry A.
Storrs & Harrison Co.
Thorburn & Co., J. M.

Service Boxes.
Clark Co., H. W.
Clow & Sons, James B.
Mueller Mfg. Co., H.

Service Box Finders.
Clark Co., H. W.

Sewage Disinfection.
Electro Bleaching Gas Co.

Sewage Pumps and Ejectors.
Otterson Auto-Eductor Co.
Pacific Flush Tank Co.
Yeomans Bros. Co.

Sewer Buckets.
Champion Potato Machinery Co.

Sewer Castings.
Clark Co., H. W.
Clow & Sons, James B.
Dee Co., Wm. E.
Enterprise Iron Works.
Pacific Flush Tank Co.

Sewer Cleaning Apparatus.
Buffalo Municipal Equipment Co.
Champion Potato Machinery Co.
Pacific Flush Tank Co.
Turbine Sewer Machine Co.

Sewer Pipe.
Dee Co., Wm. E
Pacific Tank & Pipe Co.

Sewer Rods.
Bissell Co., F.
Bond Co., Harold L.
Champion Potato Machinery Co.
Turbine Sewer Machine Co.

Shades.
Stewart Hartshorn Co.

Sheer Gates.
Chapman Valve Mfg. Co.
Columbian Iron Works.
Kennedy Valve Mfg. Co.
Rensselaer Valve Co.

Signs—Iron and Wire.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Stewart Iron Works Co.
Union Iron Products Co.

Sleeves and Valves.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Mueller Mfg. Co., H.
Rensselaer Valve Co.

Sluice Gates and Valves.
Chapman Valve Mfg. Co.
Coldwell-Wilcox Co.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Rensselaer Valve Co.
Walworth Mfg. Co.

Smoke Stacks.
Caldwell Co., W. C.
Fouts Co., C. C.
Pittsburgh-Des Moines Steel Co.

Snow Cleaning Machinery.
Baker Mfg. Co.
Good Roads Machinery Co.
Russell Grader Mfg. Co.
Zieg Mfg. Co., F. B.

Soil Pipe (Cast Iron).
Abendroth Bros.
Agricola Pipe Co.
Alabama Pipe & Foundry Co.
American Enameling Mfg. Co.
American Foundry & Pipe Co.
Anniston Foundry Co.
Bessemer Soil Pipe Co.
Campbell Mfg. Co.
Casey-Hedges Co., The.
Central Foundry Co.
Charlotte Pipe and Foundry Co.
Clow & Sons, James B.
Coosa Pipe & Foundry Co.
Crown Pipe and Foundry Co.
Gadsden Pipe Co.
Haines, Jones & Cadbury Co.
Johnson Co., J. D.
Krupp Foundry Co.
Medina Foundry Co.
Medina Iron & Brass Co.
National Foundry Co.
National Pipe & Fdry. Co.
Reading Foundry & Supply Co
Salem Brass & Iron Mfg. Co.
Sanitary Co. of America.
Somerville Iron Works, The
Standard Foundry Co.
Superior Mfg. Co.
Union Foundry Co.
Weiskittel & Son Co., A.
Wetter Mfg. Co., H.

Spraying Machinery for Trees and Shrubs.
Deming Co.
Fairbanks, Morse & Co.

Spray Nozzles.
Spray Engineering Co.

Sprinklers (Automatic).
General Fire Extinguisher Co.

Standpipes.
Caldwell Co., W. E.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Fairbanks, Morse & Co.
Pacific Tank and Pipe Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.

Steel Form for Drainage Tile.
Northwestern Steel & Iron Works.

Steel Plate Work.
Pittsburgh-Des Moines Steel Co.

Stone Spreaders.
Austin Western Road Mach'y Co.
Burch Plow Works Co.

Continued on page 134

The Problems of Present Day Road Maintenance

are being effectually solved by American mechanical ingenuity.
A very short time ago it was a slow, expensive and uncertain job to apply road oils to highways.
To-day the work can be done easily, quickly and cheaply with a

Monarch Distributor Mounted on a Truck

The tank is made in several sizes, from 600 to 1200 gallons. The material is applied under pressure, generated with a reliable pump. Practically any quantity that may be desired can be applied. The material can be heated so that it always flows readily.



MONARCH DISTRIBUTOR MOUNTED ON A PACKARD TRUCK

This Distributor can be mounted on any truck.

Ask for Bulletin of Monarch Distributor. It is free.

THE GOOD ROADS MACHINERY CO.
Kennett Square, Pa.

Every name in this list is repreesnted by an advertisement in this issue of THE AMERICAN CITY. The alphabetical index to all advertisements follows this calssified list. See page 136

Street Cleaners Carts.
Studebaker.

Street Cleaning Machines (Motor Driven).
Elgin Sales Co.

Street Flushers.
Buffalo Municipal Equipment Co.
Denby Motor Truck Co.
General Motors Truck Co.
Indiana Truck Corp.
Service Motor Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Lamps—Electric.
Cutter Co., George.
General Electric Co.
Westinghouse Electric & Mfg. Co

Street Lamp Posts.
Clow & Sons, James B.
Cutter Co., George.
Electric Railway Equipment Co.
Flour City Ornamental Iron Co.
Lyle Corrugated Culvert Co.
Stewart Iron Works Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Street and Road Graders.
Austin-Western Road Machy. Co
Beach Mfg. Co.
Good Roads Machinery Co.
Russell Grader Mfg. Co.
Union Iron Products Co.
Zieg Mfg. Co., F. B.

Street and Road Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Niagara Falls Metal Stamping Co.
Union Iron Products Co.

Street Sign Posts.
Cutter Co., George.
Flour City Ornamental Iron Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Street Sprinklers.
Austin-Western Road Machy. Co.
Autocar Co., The
Buffalo Municipal Equipment Co.
Denby Motor Truck Co.
Federal Motor Truck Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Service Motor Truck Co.
Studebaker.
Tiffin Wagon Co.
White Co., The.

Street Sweepers.
Austin-Western Road Machy. Co.
Elgin Sales Co.
Good Roads Machinery Co.
Studebaker.

Street Trash Cans.
Rochester Can Co.
Safety Sanitary Rubbish Box Co.
Steel Basket Co.

Surveyors Instruments.
Buff & Buff Co.
Kolesch & Co.

Tanks, Storage for Oils and Gasoline, etc.
Atlantic Refining Co.
Bowser & Co., Inc., S. F.
Caldwell Co., W. E.
Chicago Bridge and Iron Works.
Connery & Co., Inc.
Pacific Tank & Pipe Co.
Pittsburgh-Des Moines Steel Co.

Tanks and Towers.
Caldwell Co., W. E.
Chicago Bridge and Iron Works.
Pacific Tank & Pipe Co.
Pittsburgh-Des Moines Steel Co.
Wood & Co., R. D.
Zelnicker Supply Co., Walter A.

Tapping Machines.
Mueller Mfg. Co., H.
Smith Mfg. Co., A. P.

Tar.
Barrett Co., The.

Tar & Asphalt Spreaders.
Four Wheel Drive Auto Co.
White Co., The.

Tar Kettles.
Barber Asphalt Paving Co.
Connery & Co., Inc.
Good Roads Machinery Co.
Littleford Bros.
Warren Bros. Co.

Tarvia.
Barrett Co., The.

Testing Laboratories.
Allentown Testing Laboratory Co.

Tires, Rubber.
Dayton Rubber Mfg. Co.
Firestone Tire & Rubber Co.
Goodrich Rubber Co., B. F.
U. S. Tire Co.

Traction Engines.
Buffalo Springfield Roller Co.

Traction Trains.
Buffalo Springfield Roller Co.

Tractors.
Advance-Rumley Thresher Co.
American-La France Fire Engine Co.
Denby Motor Truck Co.
Fairbanks, Morse & Co.
Four Wheel Drive Auto Co.
General Motors Truck Co.
Service Motor Truck Co.
Watson Wagon Co.
White Co., The.

Traffic Posts.
Buffalo Municipal Equipment Co.
Cutter Co., George.
Flour City Ornamental Iron Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.
Union Metal Mfg. Co.

Traffic Regulation Signs.
Baltimore Enamel & Novelty Co.
Buffalo Municipal Equipment Co.
Enameled Iron Sign Co.
Lebanon Machine Co.
Lyle Corrugated Culvert Co.
Union Iron Products Co.

Trailers.
Buffalo Springfield Roller Co.
Eagle Wagon Works
Glen Wagon & Car Corp.
Watson Wagon Co.

Trench Braces.
Bond Co., Harold L.
Clow & Sons, James B.

Trenching Machinery.
Pawling & Harnischfeger Co.

Trench Pumps.
Bond Co., Harold L.
Deming Co.
Fairbanks, Morse & Co.
Pawling & Harnischfeger Co.
Waterloo Construction Machy. Co.
Worthington Pump & Mach. Co.

Truscon Armour Plates.
Truscon Steel Co.

Turbines.
Allis Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Westinghouse Electric & Mfg. Co.

Vacuum Pumps.
Deming Co.
Worthington Pump & Mach. Corp.

Valves.
Chapman Valve Mfg. Co.
Clow & Sons, James B.
Coldwell-Wilcox Co.
Eddy Valve Co.
Flower Valve Mfg. Co.
General Fire Extinguisher Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Mueller Mfg. Co., H.
Pratt & Cady Co., Inc.
Rensselaer Valve Co.
Simplex Valve & Meter Co.
Smith Mfg. Co., A. P.
Walworth Mfg. Co.
Wood & Co., R. D.

Valves, Air.
General Fire Extinguisher Co.
Kennedy Valve Mfg. Co.
Simplex Valve & Meter Co.

Valves, Altitude.
Simplex Valve & Meter Co.

Valve Boxes and Housings.
Clark Co., H. W.
James B. Clow & Sons.
Columbian Iron Works.
Eddy Valve Co.
Flower Valve Mfg. Co.
Kennedy Valve Mfg. Co.
Ludlow Valve Co.
Mueller Mfg. Co., H.
Pratt & Cady Co., Inc.
Rensselaer Valve Co.
Smith Mfg. Co., A. P.
U. S. Cast Iron Pipe & Foundry Co.
Wood & Co., R. D.

Valve Inserting Machinery.
Smith Mfg. Co., A. P.

Valve Seats.
Wood & Co., R. D.

Valve Specialties
Chapman Valve Mfg. Co.
Walworth Mfg. Co.

Wagons and Carts.
Studebaker.
Watson Wagon Co.

Wagon Loaders.
Haiss Wagon Loader Co.
Jordan & Steel Mfg. Co.

Water Supply Conservation.
National Water Main Cleaning Co.
Pitometer Co.

Water Main Cleaning.
National Water Main Cleaning Co.

Water Meters.
Badger Meter Mfg. Co.
Buffalo Meter Co.
General Electric Co.
Hersey Mfg. Co.
National Meter Co.
Neptune Meter Co.
Pittsburgh Meter Co.
Simplex Valve & Meter Co.
Thomson Meter Co.
Union Water Meter Co.
Worthington Pump & Mach. Corp.

Waterproofing.
Barber Asphalt Paving Co.
Barrett Co., The
Carey Co., Philip.
Minwax Co., The
Sonneborn Sons, Inc., L.
Truscon Steel Co.

Water Purification Chemicals.
See Chemicals for Water Purification.

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Pacific Flush Tank Co.
Simplex Valve & Meter Co.
Union Water Meter Co.

Water Systems.
Fairbanks, Morse & Co.

Water Towers.
Caldwell Co., W. E.
Chicago Bridge and Iron Works.
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Well Construction & Equipment
Clark Co., H. W.

Well Strainer.
Cook, A. D.

Wheel Scrapers.
Austin-Western Road Machy. Co.
Beach Mfg. Co.
Good Roads Machinery Co.
Lyle Corrugated Culvert Co.

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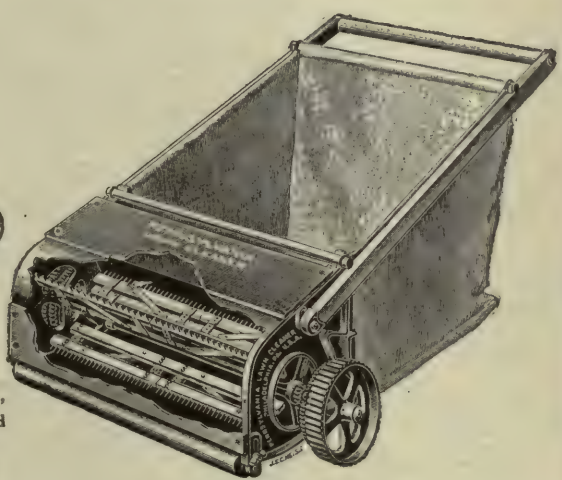
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"Panama"
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"Pennsylvania Pony"
"Pennsylvania Horse"
"Pennsylvania Grand Horse"
"Pennsylvania Trio Horse" (86 in. cut)

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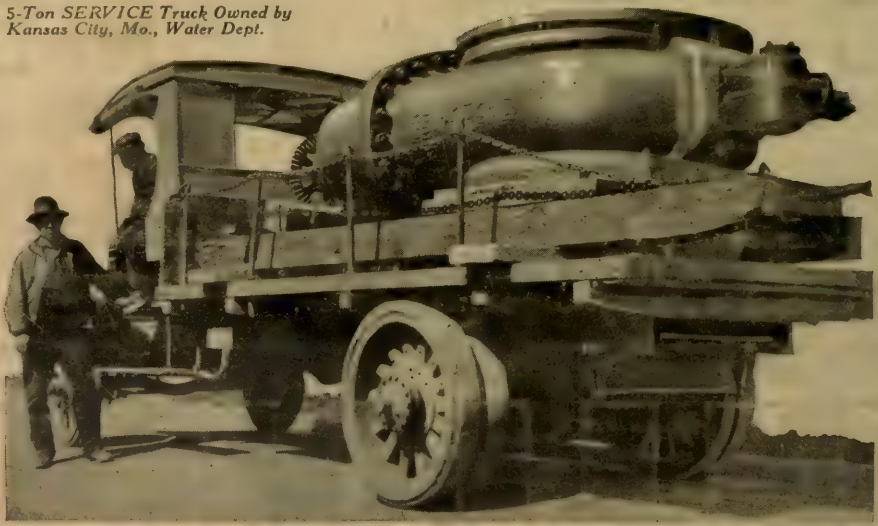
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